Introduction à la rédaction d'articles scientifiques en anglais

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Sommaire

PREMIERE PARTIE

Ce guide a été initialement écrit pour aider mes thésards et stagiaires dans la rédaction de leur(s) article(s) et rapports. Il part du constant qu'un travail de recherche non publié est oublié rapidement, même par l'équipe dans lequel il a été réalisé. La publication scientifique est donc une nécessité pour pérenniser le travail scientifique. Elle est aussi incontournable pour diffuser son travail dans la communauté internationale et se faire connaître. Elle permet également d'avoir un regard, en principe neutre et objectif, de la part de ses « pairs » sur son travail grâce à la relecture des « *referees* ». Enfin, elle est devenue un des éléments clés qui servent à évaluer le travail d'un chercheur.

La publication scientifique ne s'improvise pas. Elle suit des règles très strictes dans la structuration et la mise en forme des documents qu'il convient de respecter. Ce guide pratique vise à en rappeler les principales règles. Il s'est largement inspiré de mon expérience personnelle, courte donc forcément incomplète et partiale. A chacun de se faire ensuite son expérience. Les exemples donnés sont généralement issus de situations rencontrées. En outre, on trouvera en fin de ce guide les rubriques « conseils aux auteurs » et la philosophie éditoriale de grandes revues de géophysique, de physique et de mécanique.

Même si ce guide s'intéresse en priorité à la rédaction en anglais, les principes généraux s'appliquent à toute communication scientifique écrite allant du rapport d'étudiant au rapport d'expertise en passant par des articles de magazine. En revanche, certaines règles ne s'appliquent pas à des documents longs tels que les monographies et les livres.

Première partie :

Recommandations générales

1. Choisir une revue

Le choix d'une revue doit répondre à plusieurs critères :

- Adéquation entre le sujet de l'article et les sujets couverts par la revue. A vérifier scrupuleusement en consultant la politique éditoriale, accessible en général sur le site web de la revue ou bien dans au moins un numéro de chaque volume annuel.
- La portée des résultats présentés par rapport au niveau de la revue. Inutile d'envoyer un article technique typé ingénierie dans une revue de physique théorique !
- Recherche de la plus large diffusion. Une revue cotée est une revue diffusée largement dans le milieu concerné. Le facteur d'impact, qui *grosso modo* traduit la fréquence de citation d'une revue fournit un bon indice de la diffusion d'un journal. A titre d'exemple, le tableau 1 donne quelques-uns des principaux journaux qui intéressent des chercheurs d'ETNA.
- Vérifier que le nombre de pages, la nature des figures (couleur, etc.), et d'autres critères soient compatibles avec les conditions imposées par la revue. Attention, dans certaines revues (par exemple *Physical Review Letters*), le dépassement d'un quota de pages est une condition suffisante pour rejeter l'article. Dans d'autres cas, l'excédent de pages sera facturé.

	1999	**1992**
Annals of Glaciology	0.989	-
Annual Review of Fluid Mechanics	5.6	4.778
Applied Rheology	0.15	-
Canadian Geotechnical Journal	0.298	0.346
Cold Regions Science Technology	0.306	0362
Comptes Rendus de l'Académie des Sciences II	0.429	0.538
Earth Science Review	3.286	1.216
European Journal of Mechanics A-Solid	0.587	0.492
European Journal of Mechanics B-Fluid	0.736	0.369
Experiments in Fluids	0.614	0.448
Houille Blanche	0.012	-
International Journal of Multiphase Flow	0.87	0.759
Journal de Physique I	1.753	1.818
Journal of Fluid Mechanics	1.686	1.606
Journal of Geophysical Research	2.781	2.1
Journal of Glaciology	1.937	0.708
Journal of Hydraulic Engineering	1.018	0.678
Journal of Hydraulic Research	0.516	0.548
Journal of Hydrology	1.444	0.935
Journal of Non-Newtonian Fluid Mechanics	1.861	1.397
Journal of Rheology	2.449	1.876
Mechanics of Cohesive-Frictional Materials	0.879	-
Natural Hazards	0.295	-
Physical Review E	2.045	-
Physics of Fluids	1.42	1.326
Rheologica Acta	1.500	0.862
Water Resources Research	2.061	1.728

Tableau 1 : facteur d'impact calculé par l'ISI (Institute for Scientific Information) en 1999 et 1992.

2. Correspondance avec la revue

Comme la rédaction d'articles, la correspondance avec la revue suit quelques règles à connaître, notamment lors de la réponse à la revue des relecteurs.

2.1. La lettre d'envoi à l'éditeur

2.1.1. Généralités

Il y a deux modes de soumission :

1. par **courrier** (classique). Pensez à envoyer le nombre d'exemplaires demandé par le journal (de 3 à 5 selon la revue) et en suivant les règles éditoriales (en général, texte en double interligne), le transfert des droits d'auteur (modèle fourni par la revue sur son site web ou dans un numéro), et une lettre d'envoi (voir modèle-type). Faire sobre et ne pas oublier les éléments importants (voir lettre-type).
2. par **courrier électronique** (de plus en plus recommandé). En général fichier sous format LaTeX et figures sous format EPS, plus rarement des fichiers WORD. Suivre attentivement le format demandé par la revue (en général des modèles ou « templates » sont fournis sur le site web). La lettre d'envoi est générée automatiquement lors de la transmission. (Voir § 4.2).

Il est par ailleurs possible pour certains types d'article d'en faire des pré-tirages (« preprint ») disponibles soit au niveau du laboratoire (par l'intermédiaire de la page personnelle de l'auteur ou du site du laboratoire) ou mieux encore au niveau de serveurs dédiés comme celui de Los Alamos, ArXiv, consacré à la physique (site miroir en France fr.arxiv.org). Un projet similaire de serveur devrait voir le jour en France sous l'égide du CNRS.

Il est en général reconnu implicitement qu'un travail soumis est original et qu'il n'est pas soumis en parallèle. On prendra une attention tout particulière à la copie de textes déjà publiés par soi-même ou, pis, d'autres auteurs et à l'extraction de figures. Cela peut se rencontrer notamment dans le cas d'un travail ayant d'abord fait l'objet d'une communication à colloque, puis d'un article soumis à une revue scientifique. Plus rarement, cela peut se produire si le travail a fait l'objet de plusieurs publications séparées par chacun des auteurs. Certaines revues demandent par ailleurs de préciser si le travail, en partie ou totalité, a déjà été soumis par ailleurs et, le cas échéant, de fournir tous les éléments relatifs, y compris la correspondance avec les autres revues. Il peut être opportun dans la lettre d'envoi à l'éditeur de joindre tous renseignements concernant l'article soumis, notamment dans l'éventualité où l'éditeur se pose la question de l'originalité du travail et le chevauchement avec des articles publiés par l'auteur ou soumis ailleurs. Ce cas se produit si l'article soumis fait largement référence à un autre de ses articles. Par défaut, s'il s'agit d'une première soumission, il n'est pas nécessaire de s'étendre sur ces points.

2.1.2. *Lettre d'envoi type*

Prof. M.M. Denn
Department of Chemical Engineering
University of California at Berkeley
Berkeley
CA 94720-1462

Grenoble,
December 4, 2000

Indiquer le titre de l'article, les auteurs et éventuellement un référencement

Title: "Role of lubricated contacts in concentrated polydisperse suspensions"
Author: C. Ancey

Dear Professor Denn:

Will you please consider the enclosed manuscript submitted for publication in *Journal of Rheology.* I look forward to your reply.

Sincerely yours,

On peut (doit) être très concis dans une lettre d'envoi. Inutile de s'étendre sur l'article, son originalité, etc. c'est le travail des « referees ».

Dr. C. ANCEY

Further correspondence to:

Les titres (Dr./ Prof.) sont généralement mentionnés dans la correspindance

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2.2. La réponse de l'éditeur

Une fois que l'article a été revu (cela peut prendre de quelques semaines à plusieurs mois selon la revue), l'éditeur retourne un avis motivé et les critiques des « referees » (de 1 à 3 en général selon la revue). La latitude de décision qu'a l'éditeur vis-à-vis des commentaires des relecteurs dépend totalement de la politique éditoriale de la revue. En général, les relecteurs fournissent un avis et c'est à l'éditeur de décider. En pratique, l'éditeur se rallie le plus souvent à l'avis majoritairement exprimé. Trois cas possibles :

- refus pur et simple ;
- révision demandée. Elle peut comporter des corrections jugées mineures ou majeures ;
- article accepté ou en passe d'être accepté.

Selon les journaux, des recours sont possibles si, lorsque l'article a été rejeté, on estime que le travail des relecteurs a été partial.

Cas 1 : l'article refusé

Dear Dr Ancey

Referees reports on your paper, E0005, *The frictional-collisional regime for granular suspension flows down an inclined channel*, have now been received. Unfortunately they are negative (see below). Therefore the paper is rejected. You are free to revise or resubmit the paper if you believe that these reports are strongly misguided. However, this would result in extensive further refereeing, including at least one of the previous referees. I am afraid this seems to be a quite controversial subject and therefore it may be a better strategy to resubmit to a different journal where the referees may be more sympathetic to the approach taken in this paper.

Regards

Michael Cates

Associate Editor, EPJE

_________REPORT OF REFEREE A_______

Review of E0005: The frictional collisional-regime for granular suspension flows down an inclined channel, by C. Ancey and P. Evesque.

This paper is of little merit. Some reasons:

- The authors repeatedly refer to a fluid between the particles. In the first sentence of the abstract, we are told that this is a Newtonian fluid. On page 5, we discover that the fluid is neglected. The pretentious definition of 'granular suspensions' on page 1 is an irrelevance here.
- The analogies with turbulence theory (p. 4 and p. 19) are completely irrelevant.
- The notation used is very sloppy indeed. T seems to have at least three different meanings. The relationship between T and N is not linear (p. 11) it involves taking the magnitude.
- The assertion that two boundary layers exist (p. 15) and that they are thin is not supported by anything in the text.
- The assumption that the energy dissipation (PI) is constant through the depth of the flow is a very strong one (p. 16) and needs much more justification before it could be accepted. It leads to the conclusion that the velocity profile has the form u = U (1-y/h), where U = q/h is the mean velocity. This follows directly from the assumption and is independent of the physics. It is therefore not a reasonable assumption at all.
- The authors continually refer to 'thick enough flows' (eg p. 17), without giving a criterion for this to be the

case.

- This combination is not a simple addition' (p.19) - Yes it is! And therefore it is unlikely to be a very good model.
- Finally the discussion in the appendix is very weak and in serious need of some reality checks.

______REPORT OF REFEREE B_____

Report on E0005, Ancey and Evesque

At first sight this paper looks an interesting one. However, reading it carefully I became very frustrated.

What is needed for this problem is a constitutive modelling in which some clear assumptions are made leading to a clear and definite recipe for the constitutive behaviour in a frictional-collisional regime. This can be highly approximative, if it is clear. Then it can be solved for some cases.

At first sight it is hopeful -- perhaps a simplified constitutive approach is developed in paper I, and here it is solved in a simple geometry? Unfortunately, this is not what is presented.

Instead there is a complicated too-general analysis mainly taken from the preceding paper leading in to section 3.1. Then it is abandonned in favour of phenomenological estimations based on dimensionless parameter groupings. Finally in section 4 there is furthermore one assumption after another until there is no distinction at all between the constitutive model itself (what was promised in the abstract) and the many additional assumptions then being used to 'solve' the model for the inclined channel. Although the discussion contains many true points there are many others I don't agree on and it is impossible to tell what effect they all have.

In conclusion I cannot recommend this paper for acceptance.

Commentaire : *c'est clair, l'éditeur estime que l'article touche un sujet controversé et suggère donc de contacter une autre revue. A noter que l'avis de l'éditeur, sur le ton du conseil, tranche avec le caractère très virulent et cru des relecteurs. Ne pas se décourager face à un échec et resoumettre l'article à une autre revue sans oublier pour autant que certaines remarques formulées peuvent être pertinentes et qu'il faut identifier les passages qui ont heurté les relecteurs avant de resoumettre une version améliorée.*

Cas 2 : Demande de révision

Dear Dr. Ancey:

The above manuscript has been reviewed by one of our referees. Comments from the report are enclosed. These comments suggest that considerable revision of your paper may be in order. If you resubmit your manuscript, please include a summary of the changes made, and a brief response to all recommendations or criticisms. We regret the delay in obtaining this report.

Sincerely yours,

Debbie Brodbar

Senior Assistant to the Editor

Physical Review E

REPORT OF THE REFEREE,

This paper deals with a new model for calculating stresses and flows in granular media when the densities involved are such that both frictional and collisional contacts occur. The paper follows previous work in allowing the total stress to be the sum of a collisional and frictional stress, but breaks with previous methods by relating the stresses via the equation for energy balance. An example is given, applying this model to free flow of grains down an inclined plane, reproducing the experimental scaling for the mass flow rate as a function of grain depth. Overall, the paper is well written, with a very clear introduction, and a nice section on the time scales and behavior of grains in a frictional- collisional regime. I feel that it will prove to be an interesting contribution to the field. However, there are a number of issues that need to be attended to. Most of them are comparatively minor, but I include my main point of difficulty here. As noted, the main distinction claimed by the paper is that ``whereas most... models have expressed the bulk shear stress as the simple sum of a collisional.. and a frictional term and have admitted that both elementary contributions are independent, here we explore the possibility of a strong relationship between these two contributions. This relationship is sought via the energy balance equation''. Unfortunately, the way in which the energy relation is used to define this relationship is the murkiest point of the paper. In particular, first a steady state is assumed for solving the energy balance. Does this mean that this theory of frictional-collisional media can not be used to derive the stress state for an evolving granular flow? Then, it is assumed that the granular temperature generated by the macroscopic shear is dissipated completely by friction. Given that collisions are now ignored, in what sense can it be said that the energy balance has been used to find the relation between the frictional and collisional stresses. Finally, this balance is not actually used. Instead, it is used to argue that the energy dissipation is independent of the vertical height in the flowing layer. This appears as something of a non-sequitur, further distancing the derived results from the energy balance equation. In fact, if I understand correctly, equations (24) are the same as Savage's, but his auxiliary assumption that the ratio of the mean to dynamic pressure is independent of depth has been replaced by an assumption that the (frictional) dissipation rate is independent of depth. However, the connection between this assumption and the energy balance equation was not clear to me from the paper, and needs to be expanded. In addition to this larger point, there are a number of lesser issues that should be attended to. Occasionally the paper has a tendency to change notation or at least the way in which the same symbol is referred to. There are a number of very minor points where a reference could be included, or a particular statement should be corrected. Also, certain arguments are vaguely worded or confusing and their language should be cleaned up a little.

(…)

Commentaire *: l'éditeur demande une révision complète. On craint le pire… En fait, le commentaire du relecteur est plutôt positif et demande une clarification de quelques parties.*

L'article accepté

Dear Dr. Ancey:

Your paper will very likely be accepted for publication upon resubmittal of the corrected manuscript. Please include a cover letter, which describes any changes made in the final version. Also, please remember to submit a properly double-spaced manuscript (no more than 3 lines per inch/2.5 cm and not less than 6 mm between lines), to avoid unnecessary delays in processing.

Sincerely yours,

Joanna Popadiuk

Senior Assistant to the Editor

Physical Review E

Commentaires : *l'article est quasiment accepté. Soulagement* !

2.3. La réponse aux relecteurs et à l'éditeur

2.3.1. Contenu de la réponse

Avant de répondre à l'éditeur, et surtout si l'avis de la revue critique a été un peu dur (certains « referees » sont féroces dans leurs critiques), il ne faut pas hésiter à prendre du recul face aux commentaires qui ont été faits. Le meilleur conseil est de se laisser une à deux semaines avant de répondre si on a ressenti une certaine frustration, de la colère, du ressentiment, bref de l'énervement, à la lecture de la revue. Le temps ainsi « perdu » permettra en fait un gain certain en sérénité lors de la réponse.

Une réponse doit comporter :

- Une lettre d'envoi courte, qui résume généralement : (i) les critiques des relecteurs, (ii) ce qu'on a globalement changé ou qu'on n'a pas changé (et éventuellement pourquoi), (iii) un ou deux points particuliers sur le(s)quel(s) on souhaite attirer l'attention de l'éditeur. Attention, il faut être court, sobre (pas d'effusion de sentiment, etc.), et humble (se garder d'attaquer les relecteurs). La lettre doit faire moins d'une page (un éditeur est un homme très occupé).
- Une réponse détaillée à tous les points soulevés par les relecteurs, en général dans le même ordre d'apparition que la critique. Cette réponse peut faire plusieurs pages.

Lorsque l'article a été accepté, il faut s'attendre à recevoir les épreuves avant impression. Attention, il y a soit un délai à respecter impérativement dans la remise du bon-à-tirer et des épreuves corrigées (de l'ordre de quelques jours), soit l'arrêt de la procédure de publication jusqu'à réception des pièces demandées. Donc, en cas d'absence prolongée durant une période pendant laquelle on s'attend à recevoir des épreuves, il est nécessaire de prendre des dispositions. Le retour des épreuves s'accompagne en général :

- d'une lettre valant bon-à-tirer précisant si des corrections doivent être apportées ou non aux épreuves ;
- le cas échéant, d'une liste de tous les changements effectués au fil du texte (par exemple : « p. 2, § 2, line 2: replace "with" by "within" ») ;
- d'une copie des épreuves avec les corrections apportées. Attention en général, il y a des règles à respecter avec une symbolique précise pour chaque opération afin qu'il n'y ait pas d'ambiguïté dans l'interprétation des modifications ;
- éventuellement, un transfert des droits d'auteur s'il n'a pas été prévu dès le premier envoi.

Le plus souvent, le mode de transmission privilégié est le fax.

2.3.2. Exemple

Lettre de l'éditeur

Dear Dr. Ancey:

I enclose three reviews of your paper YIELD STRESS FOR BIMODAL SUSPENSIONS OF BEADS WITHIN A CLAY DISPERSION. I share the reviewers* confusion over the actual size of the particles used for the study, and Reviewer II*s concern over the absence of any characterization of the size distribution of the particles. The reviewers have raised a number of other important points that need to be addressed in a careful revision, including better figures and a more careful analysis of the results. Please send five copies of a revision, together with a list of changes and a detailed response to the reviews. I may seek further reviewer input after receipt of the revision.

Sincerely,

Morton M. Denn

Editor

Revue critique des relecteurs

REVIEWER I

The paper deals with the change of the yield stress of a kaolin clay dispersion (kaolin particle diameter 9 Mu m) by addition of coarse particles 0.3 < x < 3 mm of different materials (glass, sand grains and polystyrene). Not only bimodal distributions are considered. Generally an increase of the yield stress was observed. The yield stress was determined from the analysis of the slope of a mound resulting from a slump test. (No time scale is given how long the mounds shape is stable.). Results in detail:

- Fig.1: «Size distribution of the kaolin sample». No symbols no units of measure at the axes of the diagram. One has to seek for in the text. (Figures should be self-explaining.)
- Fig.2: «Size distribution of a 0.3mm glass bead sample» No symbols, no units at the axes but a cuve at the right hand side of the abscissa. A hint concerning the scaling is included in the caption.
- Fig.3: «Profile of a deposit...». No symbols, no units at the axes. No hint on the variables of Eq.(1) (from where they count).
- Fig.4: No symbols no units at the axes, but hints in the figure caption.
- Fig.5: «Maximum solid concentration....» First figure with symbols and units (dimensionless numbers!).
- Fig.6: «Variation of the yield stress as a function of the solid concentration....» (Well sorted materials.)
- Axes with symbols (somewhere), no units.
- Result: Increasing yield stress with increasing (coarse) particle fraction. No significant influence of the bead material and bead diameter (1<x<3 mm).
- Fig.7: «Variation of the yield stress....poorly sorted materials...»
- Axes with symbols without units. Caption: Two times 0.3 mm glass beads, different symbols different results, one should be 3 mm? Results: Rapid increase of yield stress for the small beads between 0.5 and 0.6 reduced volume fraction, rapid increase near 0.6 for the bigger beads: Significant influence of particle size.
- Fig.8: «Variation of yield stress as a function of..... for bimodal suspensions.... diameter1 and 3mm.
- 0.8 > Xi > 0.2 « Axes...? Increase of yield stress beyond 0.9 (!!) volume fraction. No significant influence of the composition parameter? (small or big beads) on the yield stress. Up to 0.9 solid fraction yield stress constant and much lower (half value!) as ambient suspension. This is not commented in the paper.
- Fig.9: «Variation of yield stress........for a bimodal suspension of glass beads....diameter used 0.3 and 3mm...» Results similar to Fig.8: Constant yield stress up to 0.9 solid ratios, mean value of the yield stress lower as in the pure kaoline dispersion, no comments on that in the text. Rapid increase at yield for solid ratios > 0.9. No influence of particle size.
- Fig.10: «Variation of yield stress........bimodal suspension of sand grains 0.35 and 2.5 mm..» Results:

Increasing yield stress from concentration higher 0.2, rapid increasing yield from concentrations > 0.6, higher yield stresses for the mixtures with greater portions of coarse beads. All these results are in sharp contradiction to Fig. 8 and 9. The authors hint on the grains non-spherical shape seems to be too simple. (Natural sand grains normaly have no sharp edges.)

- Figs.11 and 12: «Variation of yield stress.....» First diagrams including symbols and units!! the theoretical back ground commented in the «Discussion» seems me to be too hazardous.The coincidence between measuring points and «calculation» (in a small band of solid fraction) in Fig. 12 seem to be accidential, especialy if particle diameters of d = 1 and 3 Mu m (mistake?) are chosen (see page 13).

General comments:

- Eq(9)?
- Reference Sengun and....(1989a) P.11
- References: Husband, D.M.,N. Aksel and W.Gleissle....(1993)
- Results are not discussed critically enough: Concerning influence of particle size (many contradicctions), data scattering, method of yield stress measurements (e.g. time scale (Deborah-number?)).

No further comments on the text of the paper. In my mind this paper is not developed enough to be published in J.Rheol.

REVIEWER II

The lack of page numbers on the manuscript makes it a bit difficult to reference my comments, but in general I found this an interesting paper with potentially enormous significance in a range of technologies including cement, mortar and concrete which are mentioned in passing in the introduction. I was surprised that the extensive literature on the rheology of concrete, which is a classic example of bimodal suspensions is not mentioned at all and I would invite the authors to remedy this.

Specific points to be addressed are:

1. On figure 4 the horizontal axis is experiment number. Can this be associated with elapsed time? Knowing this would be helpful if the specimens are slightly time dependent as is not uncommon with clay suspensions.
2. on figures 6 and 7 well sorted and poorly sorted need to be better defined in respect of the coarse fraction. The paper needs particle size distribution data for the coarse fraction.
3. On page 10, the penultimate paragraph of the results section refers to yield stress enhancements being more pronounced for mixtures poor in small particles. This phenomenon is also observed with mortars and concretes. For example Tattersall and Banfill report the variation of yield stress in concrete with increasing proportion of sand in the overall aggregate distribution - it decreases initially at low sand content then levels out and then increases sharply again. Banfill reported fineness of sand in mortar and showed that yield stress is more sensitive to concentration changes with coarsely graded materials than with finely graded materials.
4. On the very last page of text the phenomenon of depletion appears to fit the experimental data for low concentrations but underestimates the yield stress at high concentrations. It occurs to me that the depletion phenomenon increases the bulk clay concentration but that concentration has a non-linear effect on the yield stress of the clay so the size of the underestimate will depend on the original clay concentration and might give a better fit to the data in a very concentrated clay. Do the authors have any data which could be used to address this point?

Finally, I am happy to suggest that the paper be published but would invite the authors to deal with these points. I can provide references to the work mentioned if you wish.

REVIEWER III

The authors present an experimental study on the yield stress of mono- and bimodal coarse particle suspensions and bimodal suspensions of beads within a fine clay suspension. Since the coarse fractions are essentially non-interactive, the yield stress phenomena of such suspensions are explained as a possible reason of particle jams and the effect of coarse particle addition into the fine clay suspension is due to the depletion effect which results in a decrease of clay solid concentration in the vicinity of the particle surface but a slight increase, on average, in the effective solid concentration in clay. By introducing an arbitrary exclusive thickness around the coarse particle surface the relative enhancement in clay concentration is evaluated and used to modify the yield stress model suggested by Zhou et al. (1999). Good agreement between the prediction and experimental data was obtained for low and intermediate concentrations but not for high concentration. The yield stress behaviour of coarse particle suspensions and the bimodal suspensions of coarse and fine particles were rarely examined before and the phenomena are still poorly understood. The paper is instructive. The reviewer recommends the manuscript to be published in J. Rheology after taking into account the following remarks.

1. The yield stress of fine clay suspensions is very sensitive to the change of surface chemistry conditions.

Whether the addition of coarse particles will bring about the change in the surface chemistry of the fine suspension should be specified.

2. With the addition of coarse particles into the fine suspension the total volume fraction increases, meanwhile the surface area average diameter of the mixed particle suspension increases as well. This suggests that the mean diameter will be a function of the total volume fraction or the amount of coarse particles added. It would be very interesting to see the result of taking this factor into consideration when applying the model suggested by Zhou et al. (1999) directly.
3. Page1, line 5, in Introduction, talks about particle ranging from 0.1 mm to 1cm which does not agree with the idea of Brownian motion or colloidal forces addressed in the next sentence.
4. In p.11 line 6, d = 2 Mu m or d = 3 Mu m ? should be mm?
5. Table 2, data of h, s and s/h do not match.
6. Figure 1 and 2, size distribution, which size? Number, surface, or volume?
7. in Figure 7 captions, two same 0.3-mm glass beads.

Lettre de réponse à l'éditeur

Dear Professor Denn

Thank you for the opportunity to revise our paper. We have extensively modified the discussion and the experimental results are presented more thoroughly. You will find enclosed the list of changes and a short answer to reviewer's comments together with five copies of the revised paper.

We look forward to your feedback on the revised manuscript.

Dr. Christophe Ancey

Réponse point par point

Reviewer I:

- Point 1 The referee complained about the lack of clarity of our figures. We have modified most of the figures and captions to improve their clarity and quality. Semi-logarithmic plots are used in the new version to better display the different peculiarities that we observed.
- Point 2 The referee waited for a more detailed presentation of the experimental procedure and procedures. In the new version, we have paid more attention in presenting our procedure and results. This includes a better description of experimental data and a more thorough discussion. Limits of the proposed explanations are also presented.

Reviewer II:

- The referee pointed the absence of relevant references concerning concrete and cement rheology. This has been corrected in the revised paper. We thank the referee for providing some references in connection with our concern. French researchers working on cement and concrete rheology have also provided us interesting papers. A summary of the main findings in the concrete rheology literature is included in Sect. I and common points with our experimental data are presented in Sect. II. D.
- Point 1 The referee suggested accounting for elapsed time in Fig. 4. This has been done in the new version. Contrary to the referee's comment, we do not think that the observed decrease may be connected to a time-dependent behavior of kaolin dispersion, since kaolin dispersions usually exhibit little time-dependent properties. Moreover Fig. 4 stressed the disturbing effect observed with suspensions of glass beads in a kaolin dispersion, such an effect that was not observed for pure kaolin dispersions.
- Point 2 More data concerning the size distributions of materials have been provided in the new paper.
- Point 3 The phenomenon mentioned by the referee presents common points with our experimental observations, notably the decrease in yield stress and the influence of size grading on the yield stress. This has been added in Sect. II. D.

– Point 4 We performed experiments with different concentrations of kaolin (volume concentration ranging from 20% to 35%) and other clay kinds (Bentonite, natural clays). On the whole, there was no change in the final results (yield stress *vs.* solid concentration) when we considered more concentrated clay dispersions. This may be shown in Fig. 13 in the new version, where we have plotted experimental data obtained with a 30%-kaolin dispersion. It was not possible to perform extensive experiments with concentrated dispersions over a wide range of solid concentrations since the yield stress increased very rapidly with increasing the concentration in coarse particles.

Reviewer III:

– Point 1 We are definitely aware of the sensitivity of yield stress to the change in surface chemistry conditions. This was recognized in the first version of the paper and put forward regarding the disturbing effect observed with glass bead suspensions. Apart from checking the variation in *p*H before and after a test, we did not perform further measurements on the suspension chemical composition. Normally, as experiments were carried out with dispersions close to the isoelectric point, we thought that the chemistry surface conditions play a less significant role here. The only problems were encountered with glass beads and in this case a specific procedure was used to avoid this disturbing effect. It involved using a suspension just after its preparation.

– Point 2 We have entirely modified the corresponding part of the paper. In the new version, we show that at high concentrations, coarse particles interact with each other via (indirect) contact forces and not via surface forces (as for clay particles).

– Points 3-7 The errors found by the referee have been corrected in the new version.

3. Structuration générale de l'article

3.1. Types d'article

Il existe différents types d'article :

- les **communications brèves** (*rapid* or *brief communications*), articles courts (2 à 3 pages) et rapides, donnant un résultat ponctuel. En général, le processus de revue est également court (quelques semaines). Toutes les revues n'acceptent pas cette forme d'article ;
- la **lettre** (*letters*), article également court, mais qui vise en général à donner résultat important, original, etc. Ce type d'article est en général publié dans des revues spécifiques comme *Physical Review Letters* ou *Geophysical Research Letters*, mais également dans de grosses revues comme *Nature*. Un article soumis à un colloque est assez similaire dans ses contraintes à une lettre ;
- les **articles réguliers** (*regular articles*), qui présentent des résultats théoriques ou expérimentaux nouveaux, une nouvelle technique de mesures, etc. Le processus de revue dure de quelques semaines à plusieurs années ;
- les **articles de revue** (*review papers*), qui présentent une synthèse à la fois des idées et de la bibliographie sur un sujet bien déterminé. Certains journaux sont spécialisés dans la publication d'articles de revue : *Annual Review of Fluid Mechanics*, *Applied Mechanics Review*, etc. Il faut dans certains cas solliciter l'éditeur avant de soumettre un article de revue ;
- les **lettres à l'éditeur** (*letters to the editor*), qui ne sont rien d'autres que des courriers adressés à l'éditeur pour exprimer une opinion, attirer l'attention sur un point particulier, faire l'éloge d'une nouveauté, ou attaquer une nouvelle théorie, etc. ;
- les **discussions** (*discussions*), qui sont des commentaires sur un article publié dans une revue et qui ouvrent en général droit à réponse pour les auteurs de l'article commenté. Assez souvent, il existe une période après la publication d'un article, durant laquelle il est possible d'adresser à l'éditeur un commentaire. Passé le délai, le débat est généralement considéré comme clos ;
- les **errata** (*errata*), qui sont un correctif d'une erreur (typographiques, données, etc.) ou d'un oubli dans un article.

La structuration générale d'une article dépend principalement de son type. Il est par exemple admis qu'une lettre et un article régulier ne s'écrivent pas de la même manière : ainsi, dans une lettre, il est possible de se passer de conclusion alors que c'est assez rare pour un article régulier. Dans ce qui suit, nous parlerons exclusivement des articules réguliers, les autres formes étant plus rares dans la pratique de publications d'ETNA.

3.2. Structure générale d'un article régulier

Un article régulier comporte en général 4 parties essentielles :

- le **résumé** (abstract, synopsis), qui présente un résumé en quelques lignes de l'objectif poursuivi, des méthodes employées, et des résultats obtenus. Le nombre de mots peut être limité mais, quoi qu'il en soit, il faut être bref et informatif : inutile de se perdre dans les détails, l'essentiel est d'afficher clairement son message. A la lecture du résumé, on doit savoir très précisément ce qu'a voulu faire l'auteur, de quoi il traitre, comment il le traite, et ce à quoi il aboutit, mais tout cela dans les grandes lignes. Par exemple si on parle de simulations d'un phénomène, il est essentiel de préciser s'il s'agit de simulations numériques ou d'expériences. Il est revanche inutile de s'appesantir sur la méthode de mesure, hormis si elle constitue le cœur de l'article ;
- l'**introduction**, qui présente une problématique générale du sujet de recherche, le but de la recherche, les objectifs du papier. Une introduction peut contenir une revue bibliographique et un plan de l'article ;
- le **développement** de l'article en différentes sections assurant une unité logique progressive ;
- la **conclusion**, qui en général fait le point sur la démarche suivie (parfois simplement rappeler le but assigné), les principaux résultats obtenus, ce qu'on en pense (« c'est bien », « c'est original », « on est surpris quand même », « on doute », etc.), mais également des perspectives : quels points méritent réflexion, quelles pistes suggérer pour de nouvelles recherches, etc.

Le résumé, l'introduction, et la conclusion sont les parties stratégiques de l'article. Ce sont elles qui demandent le plus de travail et de soin, car ce sont elles qui seront en premier lues (et parfois ce seront les seules à être lues). En général, pour donner de l'unité à son article, on gagne à commencer par écrire le développement tout en notant les éléments à incorporer dans l'introduction (idée générale, références bibliographiques, etc.), puis on continue par la conclusion, et on finit ensuite par l'introduction dont le ton doit s'accorder avec qu'on a écrit dans le développement. Enfin, en tout dernier lieu, on peut s'attaquer au résumé. Attention, au moment de la rédaction du résumé, on est souvent fatigué et on a envie de se débarrasser de l'article. Et pourtant, il faudra garder des forces pour le résumé…

Dans tous les cas, il n'y a pas de recettes tout faites qui s'appliquent à tout type d'article. La rédaction d'un article doit normalement répondre à plusieurs critères : présenter des faits, être précis, être sobre, être lisible pour une gamme variée de lecteurs, etc. Il est évidemment très difficile de satisfaire à tout cela et plusieurs structures d'article sont le plus souvent acceptables. Un exercice intéressant est d'examiner les stratégies adoptées par les grands auteurs, si possible anglo-saxons, pour rédiger leur article. Une suite de cet exercice est d'imiter leur style ou de s'en inspirer largement pour se forger sa propre expérience.

Le **titre** d'un article doit être court (ne pas dépasser 2 lignes), informatif (généralement dire ce que l'on fait ou étudie mais pas ce que l'on obtient) et suffisamment compréhensible (pas d'abréviations). Les mots peu utiles (les pronoms tels que « a », « the », etc.), les adjectifs peu informatifs (« new », etc.) sont à éviter. En général, les titres sont constitués d'un groupe nominatif, mais ils peuvent être construits sous forme de phrase interrogative. Par exemple l'article de Rallison et Hinch *dans Journal of Non-Newtonian Fluid Mechanics* , qui était intitulé : « Do we unterstand the physics in the constitutive equation? » .

Après le titre, il y a la **liste des auteurs**. Le plus souvent, l'ordre des auteurs est dans l'ordre d'importance dans la contribution, le premier auteur étant celui qui a rédigé l'article. Dans certains cas, notamment pour certaines universités anglais, l'ordre est alphabétique. En général, on ne met que les gens qui ont contribué directement au travail de recherches. Il n'est pas recommandé, même par complaisance, de citer d'autres personnes telles que le directeur du laboratoire ou un financeur dans la liste des auteurs ; c'est le rôle dévolu aux remerciements en fin d'article. Pour les personnes citées, décédées au moment de la publication de l'article, il convient de le mentionner. Attention à la liste et à l'ordre des auteurs dans le cas où l'article concerne un travail réalisé dans un laboratoire d'accueil (c'est le cas généralement des thésards, post-docs, visiteurs ou tout autre type de personnel non permanent). Dans ce cas, la propriété intellectuelle des résultats, méthodes, théories peut être difficile à établir et il vaut mieux arriver à un consensus sur la liste exacte des auteurs avant la soumission. Enfin, toujours dans ce cas, il est recommandé d'indiquer qui sera la personne assurant la correspondance avec la revue ou avec des lecteurs (mention en bas de page « to whom further correspondance must be sent » ou de manière moins formelle « author to whom all correspondance should be addressed »). Dans tous les cas de figure, la liste des auteurs doit faire état des adresses d'affiliation. Il est possible pour un auteur de citer deux adresses. De plus en plus, les adresses comportent également une adresse électronique.

3.3. Le résumé

3.3.1. Principe

Le résumé est un condensé de l'article. Devraient être inclus : l'objet de l'article, la procédure suivie ou la nature de l'approche (numérique, expérience, théorie), et les principaux résultats obtenus. Attention, il ne faut pas se contenter de dire ce que l'on fait, mais surtout ce que l'on trouve. Un résumé doit avant tout être informatif. Un résumé tient dans un seul paragraphe. Il n'est en général peu ou pas encouragé d'inclure des références bibliographiques (sauf cas particuliers), des équations, des figures, ou des tableaux. Aucune abréviation (hormis les abréviations standard comme « e.g., », « i.e. ») ne doit s'y trouver.

3.3.2. Exemples traités

Point fort : le résumé est court, mais on note que : – la première phrase fait répétition avec	Title: Yield stress for bimodal suspensions of beads within a clay dispersion This article focuses on suspensions of coarse particles within a clay

le titre (elle n'apporte aucune information supplémentaire) ; – la seconde phrase est une généralité, c'est-à-dire un résultat déjà (bien) connu ; – la troisième phrase précise l'objet de l'article mais reste très vague (comment cette dépendance est-elle recherchée ?) – la quatrième phrase est également un résultat connu, qui n'est pas propre à l'article ; – la dernière phrase serait correcte dans un plan d'article mais n'a pas sa place dans un résumé : elle n'apporte aucun renseignement. Bref, un résumé fort mauvais : vague, répétition, pas d'information nouvelle.	dispersion. The behavior of such suspensions is generally dictated by the colloidal fine fraction, notably its yield stress. The dependence of this yield stress on the solid concentration (in coarse particles) is examined. It is experimentally shown that adding coarse particles induces an increasingly marked enhancement of yield stress. Various local mechanisms, responsibly for this enhancement, are considered.
Cela peut s'améliorer nettement : – la première partie rappelle des résultats connus (d'où l'adverbe « generally »), mais on prend soin d'apporter de nouveaux résultats « However, in some cases » ; – il faut ensuite préciser les autres résultats obtenus	This paper presents an experimental investigation of suspensions made up coarse particles within a clay dispersion. The behavior of such suspensions is **generally** dictated by the colloidal fine fraction, notably its yield stress. **Here** the dependence of the bulk yield stress on the solid concentration (in coarse particles) is inferred from slump tests. Adding coarse particles **usually** induced an increasingly marked enhancement of yield stress. **However**, **in some cases**, adding a small amount of coarse particles led to a decrease in bulk yield stress. We propose **two** mechanisms responsible for variations in bulk yield stress. **First**, at low concentrations, depletion of clay particles may be sufficient to induce an increase in the bulk yield stress. Two values for the depletion layer thickness have been found depending on the coarse particle type. **Then**, at large concentrations, the substantial increase in bulk yield stress has been ascribed to the development of a coarse particle network within the dispersion. In this case, yielding results from the breakdown of indirect (lubricated) contacts between particles.

3.4. L'introduction

3.4.1. Principe

C'est la partie majeure de l'article, qui doit permettre de faire entrer *a priori* n'importe quel lecteur avec un bon bagage scientifique dans la problématique scientifique du problème traité. Ce que devraient comporter une introduction :

– un rappel sobre de la **problématique** scientifique générale : il faut rappeler le contexte dans lequel l'étude s'inscrit. Quelles sont les questions scientifiques qui se posent ? Eventuellement on peut donner des indications sur l'importance sociale du thème traité. Cela peut se justifier d'autant plus qu'on aborde un sujet mal maîtrisé ou aux applications mal cernées par le plus grand nombre des lecteurs et dont l'intérêt pourrait paraître limité à l'éditeur ou aux relecteurs. Cela est particulièrement vrai dans les grandes revues, où il est exigé que les résultats présentés doivent être d'une portée large et non s’adresser à une communauté réduite de personnes. Dans le cas contraire, lorsque le thème traité est bien connu, il est généralement inutile de s’étendre trop sur les applications ;

- l’**objectif** de l’article : il faut clairement faire apparaître ce qu’on cherche à faire dans l’article. S’il y a un message clair (démontrer un résultat, présenter des résultats expérimentaux, etc.) qui peut s’exprimer simplement en une phrase, on gagne à l’expliciter dès le début de l’introduction. Sinon, il faut montrer au lecteur quelle est la question que l’on va traiter, c’est-à-dire tout à la fois isoler le point qui pose problème et le rattacher au travail qui a déjà pu être fait sur le sujet ou des sujets connexes ;
- une **synthèse bibliographique** des travaux de recherche similaires : il faut faire un état de l’art et préciser ce que l’article va apporter par rapport à ce qui est déjà publié. L’étendue de la synthèse bibliographique et son contenu dépendent du thème abordé. Si on écrit un article qui présente des résultats en prolongement d’autres, il faut mentionner dans le détail les précédents résultats obtenus, éventuellement on peut les commenter. Dans le cas contraire, si on présente des résultats sans lien direct ou en rupture avec d’autres, il convient plutôt d’expliciter les idées contenues dans la littérature et non s’attarder dans le détail des résultats ;
- l’**approche** suivie, c’est-à-dire la manière dont on va répondre à la question posée : s’il s’agit d’expériences, il faut indiquer le principe général (procédures, appareil) ; s’il s’agit de résultats théoriques, on doit indiquer le cadre du traitement et les grandes idées mises en œuvre. Dans ce dernier cas, il est possible de donner une explication grossière (« avec les mains ») de ce que l’on va faire et de démontrer par des arguments heuristiques le résultat auquel conduisent des calculs rigoureux ;
- le **plan** de l’article. Cela n’est pas obligatoire, mais cela peut aider si l’article est un peu long.

Il n’y a pas d’ordre pré-établi dans l’agencement de ces différentes parties. Ce que ne devrait pas être une introduction :

- un cours : on prendra garde dans la problématique à ne pas s’étendre longuement sur des notions jugées élémentaires. Le rappel d’une problématique scientifique ne doit pas donner lieu à un exposé trop long ;
- un bavarde : on se méfiera des envolées lyriques, du foisonnement de concepts vagues, d’idées trop générales, et des lieux communs ;
- un annuaire ou un mémento : on ne vise pas nécessairement l’exhaustivité, notamment dans les références bibliographiques.

3.4.2. Exemples commentés

La première phrase de l'article donne l'objet de l'article[1]. L'objectif indiqué ici est assez général, juste après on va préciser exactement ce qu'on entend. A noter le « here », qui à la fois permet de faire la jonction avec la première phrase mais également de préciser que les définitions données propres sont à l'article et donc peuvent différer d'autres acceptions. Suit après une description de la physique du problème. L'adverbe « usually » permet d'indiquer que le vocabulaire utilisé est d'un usage assez commun.	This paper presents an **experimental investigation** into dry granular flows down an inclined channel, **with specific attention** directed to the frictional-collisional regime. **Here** the term "dry granular flows" refers to flows of a granular suspension made up of solid particles in air. The solid concentration ϕ defined as the ratio of solid volume to total volume is high, basically higher than 50% on average. The typical particle size is assumed to be sufficiently large for the electrostatic effects and air fluidization to be negligible. Particles interact with each other in various ways: through sustained contacts, which transmit forces throughout the bulk, or by instantaneous contacts, which produce an exchange of momentum between particles. The former type of contact is **usually** called "frictional contact" while the second is referred to as "collisional contact". Here the frictional-collisional regime corresponds to a flow regime where bulk stress results from the combination of collisional and frictional contacts. Dimensional analysis can be helpful in delineating the flow regimes using dimensionless groups (see [1, 2]). This can be done, for example, using the Coulomb number, defined as the ratio of collision magnitude to the typical stress Σ acting on particles: $N_{Co} = \rho_p a^2\Gamma^2/\Sigma$, where Γ is the mean shear rate, ρ_p is the particle density, a is the particle radius. The frictional-collisional regime is expected to occur when $N_{Co} = O(1)$.
On attaque ici la première partie de la bibliographie, avec pour objectif de donner des indications sur la problématique théorique. On notera que : – la première phrase introduit la séparation frictionnel/ collisionnel ; – un parallélisme de la structure des phrases permet de marquer clairement le début de chaque descriptif ; – un parallélisme dans la description des idées. On commence ici par indiquer le cadre théorique de description du régime macroscopique, puis le type de résultat obtenu, enfin l'origine physique du comportement macroscopique.	Such a regime is an intermediary stage between the frictional and collisional regimes. **For a purely frictional regime** (called also "quasi-static" or "rate-independent plastic") $N_{Co} = 1$, bulk behavior is generally described within the soil-mechanics framework using empirical models or homogenization techniques. In a simple shear flow, it is found that for sufficiently large deformations, the shear stress τ is independent of the shear rate and is linearly linked to the normal stress σ [3]. The resulting relationship is known as the Coulomb law: $\tau = \sigma \tan\varphi$, where φ, called the internal friction angle, is a parameter intrinsic to the material. Frictional behavior originates at the particle scale from sustained frictional contacts between closely packed particles [4, 5]. **For a collisional regime** N_{Co} ? 1 (also called "grain-inertia regime" in reference to the pioneering work of Bagnold [6]), bulk behavior is usually described using kinetic theories, which are based on an analogy with gases [7]. In a simple shear flow, the shear stress τ is linked to the shear rate $\dot{\gamma}$ through a viscosity term η, which depends on the particle velocity fluctuation strength: $\tau = \eta(T)\dot{\gamma}$, where $T = \langle u'.u' \rangle$, called the granular temperature, is the square root mean of the velocity fluctuations u'. Furthermore, it is generally found that for a simple shear flow the viscosity varies as the shear rate and thus the shear stress is a quadratic function of the shear rate.
Saut de paragraphe pour indiquer le changement d'idée. Ici, on va isoler le point problématique : « on sait peu de choses sur	Relatively little is known on the frictional-collisional regime from both theoretical and experimental points of view.

[1] Plusieurs constructions possibles : the article presents an experimental investigation of, outlines a computational method for, the paper of this paper is to illuminate some of the issues related to. Ou encore : the basic idea of this paper is to, our approach in this paper is to, we are intested in, etc.

le régime frictionnel-collisionnel ». Attention c'est en général une phrase très vague qu'il faut reprendre. Ici on l'éclaire à l'aide d'un paradoxe. 2° partie bibliographique : on donne des exemples montrant ce qui se passe dans un écoulement. A noter qu'on commence par donner le résultat ou le message « des expériences récentes (…) ont montré que ». On donne ensuite un résultat plus précis. A noter l'adjectif « typical » pour élargir l'exemple et lui conférer un caractère général. Les références bibliographiques ne sont données ici qu'à la fin. A noter aussi qu'on indique ce que les auteurs ont fait et ce qu'ils ont obtenu.	Conceptually, the mere idea that collisional and frictional contacts coexist at high solid fractions may be seen as paradoxical. Indeed, for collisional contacts to be an efficient mechanism in bulk stress generation, the motion of particles through the bulk must not be too impeded and contacts must be of short duration. Conversely, for frictional contacts to influence bulk stress, particles must be closely packed with contacts of long duration. **Recent experiments and numerical simulations have contributed to clarifying this paradox. They have shown that** at any time in a simple shear flow (i) networks of particles in close contact cover the flowing layer, (ii) they transmit strong forces, and (iii) they surround particle clusters, where the stress level is much lower. Particles belonging to a force network experience sustained frictional forces ("strong population"), while particles in clusters ("weak population") are mainly subjected to collisions. **Fig. 1 depicts a typical distribution** of contact forces within a granular flow down an inclined channel, **obtained by** Prochnow and co-workers [8] using a contact dynamics numerical scheme. **Likewise**, Cappart and his co-workers [9] **measured** the particle velocity and granular temperature for different kinds of water-saturated mixtures of cylinder-shaped PVC granules flowing down an inclined channel. They **observed** regions where the granular temperature was fairly high and mean velocities were not well correlated, and other regions where the correlation in the mean particle velocity was significantly enhanced and granular temperature was decreased.
Saut de paragraphe = nouvelle partie. On va indiquer comment on va s'y prendre pour répondre à l'objectif assigné. Pour cela, on donne les avantage/ inconvénient des deux principaux appareils de mesure. Les deux variantes sont indiquées tout d'abord. Puis décrites tout à tour. Une telle description ne se justifie pas toujours, mais ici l'auteur cherche à couper l'herbe sous le pied d'éventuelles critiques sur l'approche expérimentale suivie. A noter : – on donne un avis sur l'intérêt de la première variante, on l'appuie par un exemple ou une référence précise ; – comme il n'y a pas parallélisme de la structure et des idées, on a séparé les deux descriptifs par un adverbe « In constrast ».	From an experimental point of view**, one is faced with various difficulties when** investigating the rheological properties of a frictional-collisional regime. **So far annular shear cells** (a variant of the parallel-plate rheometer) and **inclined channels** have been the **most common geometries** used to infer the constitutive characteristics of granular suspensions. An annular shear cell benefits from a simple viscometric treatment since the shear-rate and stress distributions are normally known in advance. However, in practice, various disturbing effects (shear-rate localization, stick-slip behavior, etc.) limit the advantage of this geometry for granular flows. The origins of these disturbing effects have been **partially** explained. **For instance**, by simulating a shearing box whose upper boundary sheared arrays of disks at constant volume, Aharonov and Sparks [10] observed intermittent networks due to grain jamming, resulting in a stick-slip motion. **In contrast**, due to the free surface which allows dilatancy, granular flows down an inclined channel are not subjected to such disturbing effects, but contrary to the annular shear cell the shear rate cannot be imposed.
Nouveau paragraphe. Il s'agit d'une nouvelle étude bibliographie, mais très différente dans son principe des deux précédentes. Tout d'abord on sépare les résultats expérimentaux en deux catégories. La séparation est rendue ici par le parallélisme des structures et elle est annoncée par la phrase « il est bien connu que (…) ». Comme l'article ne s'intéresse qu'à la seconde catégorie, on donne une référence parmi les plus significatives d'articles concernant la première catégorie sans préciser les résultats particuliers mais uniquement un résultat très général. D'autres références suivent mais sans	**To date**, few experiments have been carried out with the objective of determining the rheological properties of granular flows in a frictional-collisional regime**. It is well known that the type of bottom roughness significantly affects the nature and structure of flow. For a smooth bottom** and shallow flows, the material flows as a diffuse, low-density layer of strongly agitated particles while, for increasing flow depth, a "locked" flow occurs with a high slip velocity at the base and a vanishing shear rate inside the flowing material [11]. **For a rough bottom**, a sheared flow occurs with a low slip velocity at the base. Most experimental research has focused on channels with a smooth base, most of the time in order to investigate the collisional regime [11-21]. **Only a few authors used inclined channels with a rough bottom. Using** a 1.2-m-long channel, Suzuki and Tanaka [22] **carried out tests** on calcite, sand, and glass beads. **They found** that a Bingham model could be used as a constitutive equation. In fact, owing to the

détail des résultats. En revanche, pour la seconde catégorie, celle en rapport avec le présent article, la revue bibliographique est plus complète. Contrairement aux fois précédentes, on adopte ici une forme classique, avec énumération des résultats par ordre chronologique, en mentionnant le type de mesures et les principaux résultats obtenus. Localement des remarques sont formulées. A noter : – tous les verbes sont au passé ; – il y a un certain parallélisme de construction.	narrow range of flow rates, a linear relationship between discharge and flow depth fit their data better and thus their conclusion was probably erroneous. Using a 1.2-m-long channel and polystyrene beads 1.2 mm in diameter, Savage measured the free surface profile. The velocity profile at the sidewall and the free surface was measured using two fiber optic probes and signal correlation techniques. The velocity profiles measured at three slopes (32.6°, 35.3°, and 39.3°) were convex, with an inflection point near the free surface. He gave scarce data concerning the discharge equation. From these data, we can deduce that it was nearly linear. Velocity profiles were also measured by Ishida and Shirai [23, 24, 25]. The channel was 0.954 m long and its base was roughened using sand paper. They used three types of particle: sand grain (0.19 mm), glass bead (0.35-0.5 mm), and alumina powder (0.23 mm). The base was aerated by injecting a flow rate of air through a porous bed. The profiles were slightly convex for lower channel slopes (24°) and tended toward a linear profile for increasing slopes (30°). No slip was observed at the bottom. Vallance used a rough channel 1.2 m in length and 7.5 cm in width. Using both a trapping system and image processing, he observed that the velocity profile was slightly convex at the sidewall but linear inside the flow. For low inclinations and flow depths h, the discharge q varied as $h^{5/2}$ while for thick flows and slope in excess of a critical value close to the internal friction angle, the discharge varied as $h^{3/2}$ [26]. Using glass beads and a narrow channel (2.5 cm wide), Ancey and co-workers [27] found that for sufficiently large discharges, the mass flow rate was linearly dependent on the flow depth for slopes ranging from 25° to 37°. Pouliquen [28] used a very wide (0.7 m) plane 2 m in length. The material was glass beads with the diameter ranging from 0.5 mm to 1.3 mm. After releasing the material contained in a box, he measured the velocity of the front using an image-processing system. Within the range of slope $[20°, 28°]$, he found that the mean velocity at the leading edge varied as $\ln\lvert\theta-\varphi\rvert h^{3/2}$.
Nouveau paragraphe pour indiquer des thèmes connexes.	**In addition**, few experiments have been performed using a two-dimensional channel. Drake [29, 30] used a 3.7-m-long and 3.25-cm-wide channel and acetate beads (6 mm in diameter). Measuring the velocity and density profiles, he showed that flow could be divided into three layers: a slipping layer near the bottom, a chaotic zone, and a saltation layer near the free surface. Azanza and co-workers ran similar experiments and compared their data with predictions from a kinetic theory [31]; partial agreement was found when flow was dilute (i.e., near the free surface).
Un nouveau paragraphe, qui va faire une synthèse. On notera que dans les deux premières bibliographies, le processus suivi était : 1) idée générale, 2) exemple, 3) références. Ici dans cette dernière partie bibliographique, c'est 1) revue des résultats (procédure, appareil, résultats), 2) synthèse. La synthèse permet de faire le lien avec l'article : certes il y a eu des résultats auparavant, mais ils sont partiels. Cela justifie donc que nouveaux essais ont été conduits. A noter la structure : – « on the whole » qui introduit la phrase de synthèse et la justification générale	**On the whole**, all these experiments endeavored to measure a few quantities (velocity profile, density profile, etc.) in a narrow range of flow conditions without providing a comprehensive picture of the flow pattern (flow regimes, discharge equation, etc.). This **perhaps** explains why they are not always consistent when compared with each other. **For instance**, in the case of dry granular flows down inclined channels, authors found that, for a steady uniform flow, the discharge equation was: $q \propto h^{2.5}$ (with h the flow depth and q the flow rate) [28] whereas others found a relation in the form of: $q \propto h$ [27]. The present paper reports an investigation of the flow properties of dry granular flows down an inclined channel. To supplement the detailed experiments performed by Johnson, Nott, and Jackson [11]

de synthèse et la justification générale de l'article (implicite) – « this perhaps explains », qui suggère une explication – « for instance », qui appuie la suggestion Enfin, l'objectif de l'article (à comparer avec l'objet donné dans la première phrase de l'introduction : c'est bien une répétition) est rappelé. Le plan de l'article est fourni.	on dry granular flows down smooth chutes, here we focus our attention on flows down a rough bottom. **First** we will describe the materials used and the experimental procedure in Sec. 2. **Then** Sec. 3 will present the experimental data and discuss on the different parameters influencing flow properties. **Finally** Sec. 4 will examine various theoretical models developed to model granular flows in a frictional-collisional regime. Their predictions will be compared with our data.

Autre exemple d'introduction : on commence par la problématique sociale, suivie juste après de la problématique, scientifique générale et enfin de l'objet de l'article. A noter les locutions types.	**Suspensions** of solid particles **are frequently encountered** in manufacturing processes and in natural flows. **Typical examples include** debris flows on mountain slopes, which cause death and property damage each year, and fresh concrete, extensively used in building. For such materials, **engineers are greatly interested in inferring** the bulk flow properties (to predict workability for mortar, spreading for mud, etc.) directly from the particle size distribution without resorting to laboratory investigations, which are most often impractical and expensive. **The paper presented here is intended as a further step in this direction.**
Après l'énoncé de la problématique scientifique générale, on s'attaque au contenu scientifique du thème abordé en résumant dans les grandes lignes les choses connues et admises. A noter l'absence de référence (on aurait pu renvoyer à un bouquin détaillant cette partie). On arrive à la définition du point posant problème : le manque de données et de connaissances sur le comportement rhéologique des suspensions à granulométrie étendue. On justifie par une série de références-clés, où plus que les données expérimentales, ce sont les messages (conclusions, interprétations) qui importent. A noter alors le changement dans les temps des verbes. L'emploi du présent renforce l'idée que le concept énoncé est bien vrai alors que l'emploi d'un temps passé le rend relatif (à l'auteur) ou subjectif.	Particle size distribution and shear rate both influence the behavior of these suspensions. When the particle-size distribution is great, typically ranging from 0.1 µm to 1 cm, the interactions between particles and the surrounding fluid are various. For relatively small shear rates, the finest particles are generally very sensitive to Brownian motion effects or colloidal forces while coarse particles experience frictional or collisional contacts or hydrodynamic forces. **As a result**, bulk behavior is very complex and depends on many parameters: solid concentration, size and shape of particles, size distribution, the nature of the ambient fluid, and so on. **To date**, from both experimental and theoretical points of view, **little is known about the rheological behavior of these suspensions**. In the context of coal slurries, Sengun and Probstein [1, 2, 3] **have performed a series of experimental investigations** as well as a theoretical analysis on the high shear-rate limit (hydrodynamic behavior). They considered polymodal suspensions (i.e., with high size distribution) as bimodal suspensions, an important new concept; indeed, these suspensions can be seen as a suspension of force-free particles in a water-colloid dispersion. The colloidal fine fraction is assumed to act independently of the coarse fraction. As it is the interstitial fluid, it imparts most of its rheological features to the entire suspension, as for suspensions of non-colloidal particles within a Newtonian fluid. The coarse fraction is expected to contribute mainly to the rise in viscosity (through hydrodynamic dissipation).
Les phrases sont courtes et ne contiennent qu'une idée. On continue la revue bibliographique, qui n'est pas exhaustive, mais centrée sur un panorama des différents concepts énoncés.	**A similar point of view was adopted** by Coussot and Piau [4] in their study of water-debris mixtures. **These authors showed experimentally** that (i) the type of bulk behavior is dictated by the presence of clay particles and (ii) both solid concentration and the range of size distribution of coarse particles affect the rheological parameters. The yield stress varied with the coarse fraction concentration. **This result contrasts with** the approximation made by Sengun and Probstein on the non-interaction between coarse and

	fine fractions. Since the yield stress in such suspensions mainly originates from colloidal interactions, the observed increase (resulting from coarse particle addition) indicates that such interactions may indeed exist.
A noter la répétition de verbes tels que « to find », « to observe », « to reveal », « to show », qui permet en fait de clairement afficher qu'il s'agit d'un résultat	**Independently**, several experiments have been devoted to the rheology of fresh concrete, cement, and mortar (a mixture of sand, cement, and water). Over the last decade Banfill [5, 6, 7] has performed extensive investigations on the parameters influencing mortar rheology. **He** [8] **has shown** that mortar exhibits the viscoplastic behavior of fresh mortar after a process that he called *structural breakdown* (during shear, a significant part of links between cement particles is broken and adhesive contacts are replaced by lubricated contacts). **He also revealed** that, at a given solid concentration, the rheological parameters were very sensitive to the sand fineness. **For instance, he found** that the yield stress was substantially enhanced when increasing the fine sand fraction [6, 9]. In their reviews on the concrete and cement rheology, Hu [10] and Mansoutre [11] reported several results published in the technical literature which showed a significant variation in the yield stress when the cement composition was changed. Furthermore, in her rheological study of tricalcic silicate (a major component of Portland cement, ranging in size from 3 to 100 μm), Mansoutre [11, 12] used a controlled-stress parallel affixed to a parallel plate geometry in order to measure the variations in the bulk yield stress and the normal stress for different solid concentrations and cement compositions. **She found** that at low and intermediate concentrations yield stress resulted from colloidal interactions since it was linearly dependent on the ionic strength and that yield stress grew as a power function of the solid concentration. When the solid concentration exceeded a critical value, the yield stress increased much more rapidly and a non-zero normal stress arose. She interpreted this as a result of "*dilatant behavior*." Moreover, she showed that the increment in yield stress produced by this phenomenon was to a large extent a linear function of the normal stress. She concluded that at high concentrations, bulk yield stress resulted from both colloidal and frictional interactions.
L'objectif de l'article est donné. Ici il comporte deux points, qui sont présentés dans la même phrase. Puis on décrit très rapidement comment on va s'y prendre. Cette partie sert également de plan.	**The first objective of this study is to find** the key parameters of the coarse fraction (solid concentration, grain shape, diameter) that affect the yield stress, **with an attempt to explain** the physical phenomena behind this variation by examining the reliability of the approximation on the non-interaction between solid fractions**. To that end,** we have investigated the effect of unimodal and bimodal distributions of the coarse fraction on the yield stress value. This series of experiments can serve as a discriminating test on the role played by the type and size distribution of coarse particles. In addition, different theoretical models available on colloidal systems are examined and tested for further insight into the yield stress increase induced by the coarse fraction.

3.5. Le développement de l'article

3.5.1. Principe

La structure d'un article doit s'organiser autour de mots clés, par un découpage net en paragraphes, et au sein des paragraphes par des adverbes ou des locutions permettant d'afficher clairement où on en est dans l'explication. Ces principes très généraux étant posés, il convient de préciser qu'un article théorique n'obéit pas nécessairement à la même logique de rédaction qu'un article expérimental.

A mon avis un article théorique est en général plus facile à écrire car l'unité du développement est plus linéaire et progressive. Ainsi, dans un article purement théorique on progresse le plus souvent de la manière suivante :

1. définition de l'objet à traiter : formulation d'une équation, d'une loi de comportement, etc. ;
2. cadre de traitement : mécanique des milieux continus, mécanique des corps rigides, etc. ;
3. hypothèses générales, notations ;
4. calculs, avec ou sans approximations ;
5. résultats théoriques ;
6. interprétations ;
7. et souvent : comparaison avec des résultats expérimentaux publiés ou présentés dans l'article, comparaison avec d'autres résultats théoriques.

L'article expérimental est en revanche plus délicat à écrire. La première question concerne la présence ou non d'éléments théoriques nouveaux ou publiés. La seconde question tourne autour de la présentation des résultats et de leur interprétation, notamment s'il y a des comparaisons avec des modèles théoriques.

Quand on présente à la fois des résultats expérimentaux et théoriques, il se pose la question de l'ordre : doit-on commencer par présenter les résultats théoriques puis expérimentaux ou faire l'inverse ? Il n'y pas de solution arrêtée. Plusieurs stratégies sont possibles même si probablement une ou deux se dégagent comme meilleures car conférant à l'article clarté et unité. Par exemple, si on présente ses résultats expérimentaux et qu'on souhaite les comparer à des modèles théoriques, il est souvent avantageux de procéder comme suit :

1. présentation des données expérimentales : simple interprétation des résultats sans référence à un modèle ou tentative d'explication ;
2. présentation des modèles théoriques : généralités, contenu (principaux résultats), domaine d'application ;
3. comparaison avec les modèles théoriques et interprétation physique : adéquation des modèles, points bien traduits, points mal représentés par les modèles, etc.

Inversement, si l'on présente son modèle théorique ou bien si l'objectif assigné est de tester des modèles théoriques, il faut naturellement procéder de la manière inverse en commençant par décrire les modèles, puis en fournissant les données et observations, enfin en comparant données et résultats théoriques.

Dans la présentation des résultats expérimentaux, il existe un certain ordre qui est en général à respecter :

1. données sur les matériaux utilisés (caractéristiques, etc.). Indiquer également comment ses mesures ont été obtenues. Si les procédés de mesure ne sont pas considérées comme classiques ou s'il n'y a pas consensus quant à leur utilisation, il faut les décrire ;
2. description du dispositif de mesure : type, dimensions, principe. Description des appareils de mesures, avec éventuellement problèmes rencontrés, limitations, etc. Incertitude sur les mesures ainsi obtenues ;
3. procédure général de l'expérience : protocole, procédure particulière, etc. Problèmes rencontrés : phénomènes perturbateurs, etc.
4. traitement des données : mise sous forme sans dimension, autre forme de traitement, etc. Réduction du nombre de paramètres utiles par analyse dimensionnelle, notations particulières, etc. ;
5. principe dans la présentation des résultats. Par exemple : observations qualitatives pour délimiter un schéma général, puis données ;
6. description des résultats. Par exemple :
   - *raisonnement par déduction*. Les opérations sont dans l'ordre : mention de la figure, explicitation des tendances, fait(s) majeur(s) retenu(s). Cela donne quelque chose comme : “la figure n° 1 montre la variation de X en fonction de Y pour différentes valeurs de Z. On observe que, pour les petites valeurs de Z ($Z<1$), X est très proche de zéro. Cela pourrait signifier que le processus est encore peu efficace pour Z compris entre 0 et 1. En revanche, lorsque Z est très grand (…)”.
   - *Raisonnement par induction*. Les opérations sont alors : observation générale, explicitation du sens de cette observation, exemple appuyée sur une figure. Par exemple : “Quand on sélectionnait de petites valeurs de Z (typiquement $Z<1$), nous avons observé que la variable X est à peine supérieure à zéro comme cela est montré par la figure n° 1. Cela tendrait à montrer que le processus n'est pas encore efficace pour une telle gamme de Z (…)”.

Il faut retenir que le point 5 (observations qualitatives, vue générale sur les résultats expérimentaux) aide en général à structurer la description des résultats expérimentaux (étape 6). En effet, lorsqu'un article expose un grand nombre d'observations, le foisonnement de résultats tend alors à rendre difficile tout tentative de structuration. D'où l'importance de guider le lecteur en lui fournissant un canevas et des idées générales, puis en repérant clairement dans le texte des mots servant à la structuration. Ces mots peuvent bien entendu être des mots usuels dédiés à la structuration : “first, second, etc.”, “On the one hand, on the other hand”. Cela peut être aussi réalisé à l’aide de mots ordinaires, ordonnés de manière identique sur le plan grammatical. Par exemple “Figure 1 puts together the data obtained with (…). Figure 2 expresses the variation in (…)”.

S’il y a vraiment beaucoup d’observations, il peut être utile de faire une synthèse en fin de la partie expérimentale, qui trace les principales tendances. On prendra garde qu’une synthèse n’est pas une simple compilation de données mais implique une organisation le plus souvent différente des résultats. Ainsi, lors de la présentation des résultats et le commentaire des figures, on décrit ce qui se passe. Par exemple, “when Z was increased above a critical value (around 1), there was a transition from regime A to regime B. A typical example is given by Fig. 1, where (…)” ; pour chaque figure, on décrit ce qui se passe (cela doit pouvoir se voir ou se déduire de l’examen de la figure). Ce faisant, la multiplication des commentaires propres à chaque figure ne permet pas toujours au lecteur d’extraire les idées essentielles. Il est alors intéressant de croiser toute l’information : c’est l’objet de la synthèse que de regrouper les caractéristiques essentiels de phénomènes qui auraient été mises en évidence à travers différentes figures ; par exemple, “regime A occurred for a narrow ranges of values of Z (as show in Figs. 1, 2, and 3)”.

Une autre difficulté est liée à la transformation de données. Très souvent, on fait subir un traitement aux données, par exemple une mise sous forme adimensionnelle. Il peut être utile, sinon indispensable, de fournir les données brutes (“raw data”) des expériences (sous forme de tableau, de graphique, etc.), puis de montrer comment ces données sont ensuite dépouillées ou traitées.

Enfin, dans les commentaires, on doit veiller au niveau des interprétations. Il convient en général de décrire les observations expérimentales et les figures à un niveau assez simple mais d’une manière la moins subjective possible. La devise d’action est “on fait cela, on a obtenu cela”. Si l’article est purement expérimental, on peut à chaque description se lancer dans des explications ou des interprétations de résultats lors de chaque commentaire de figure : “on fait cela, on a obtenu cela, cela veut dire ceci”. Une autre manière de procéder consiste à faire une section spécifique, en général intitulée “discussion”, “analysis”, etc., qui regroupe toutes les interprétations des résultats expérimentaux au moyen de modèles (théoriques, numériques) ou d’explications heuristiques. Si l’article est mixte (théorie/ expérience), cette analyse prend naturellement sa place dans le cadre de la comparaison modèle/ expérience.

3.5.2. Exemple

L’article commence par décrire les caractéristiques des matériaux employés. A noter ici que même s’il est fait mention du granulomètre, le principe de l’appareil n’y pas donné : il le sera ultérieurement car comme c’est un appareil récent, il n’est pas	**II. EXPERIMENTAL PROCEDURE** **A. Materials** For the fine fraction, we used natural kaolin clay provided by *Silice et Kaolin* and *Prolabo* (France). The particle density was approximately 2650 kg/m³. The chemical composition was kaolin ($Al_2 0_3 \cdot 2SiO_2 \cdot 2H_2 0$) 99.84%, calcium 0.025%, chloride 0.025%, sulfate 0.0025%, and organic impurities 0.1%. The grain size distribution was measured using a Malvern laser granulometer (see Sec. B for particulars). The volume median diameter of the

établi que les données qu'il fournit soient toujours cohérentes avec d'autres mesures.

A noter aussi le temps : tout est au passé. On fait référence ici au figure en dernier lieu. On a donc suivi le principe : 1) généralité, 2) résultat trouvé, 3) figure pour preuve ou info supplémentaire.

Après les matériaux bruts, on présente la suspension utilisée. A noter :

- temps toujours au passé
- chaque symbole introduit est défini
- chaque mesure est décrite
- contrairement au granulomètre, on ne dira rien de plus sur le rhéomètre utilisé : on considère que c'est un appareil connu
- les données importantes sont décrites avec précision : nature, obtention, incertitude
- saut de paragraphe quand on passe à un matériau.

C'est avec la description du dispositif de mesure qu'on décrit le granulomètre : principe, sensibilité, etc.

particles was estimated at 5.5 µm (**see** Figure 1) while the computation of the volume average diameter (d_v) gave 8 µm (**defined as** $\Sigma\, x_i d_i$ where x_i is the volume fraction of particles that have a diameter d_i). The number and surface average diameters were estimated at 0.7 µm and 3.6 µm respectively. (…)

For each test, we prepared a clay dispersion by adding a given volume of kaolin to clear water. The dispersion was then strongly mixed by hand for more than 20 minutes. The solid concentration in kaolin ϕ_k (kaolin volume to total volume) was usually 25%. The corresponding density of the dispersion was 1417 kg/m³, with uncertainty less than 1%. For sensitivity tests, we used more concentrated kaolin dispersions (30% and 35%) and a 6%-bentonite dispersion. The rheological characteristics of the dispersions were investigated using a Haake controlled-rate rheometer with a parallel plate geometry (gap: 3 mm, radius: 25 mm). The plate surfaces were roughened with a fine sand paper (equivalent diameter 0.2 mm). **As is usual for this kind of material** [1], we **used** a Herschel-Bulkley model to fit experimental data and estimate the yield stress, which was found to be 39 Pa with **uncertainty** less than 10%. (…)

For the coarse fraction, we used sand grains, polystyrene beads, and glass beads. The main characteristics of these materials are reported in Table I. Apart from 1.05-mm polystyrene beads as well as 2- and 3-mm-diameter glass beads, the material was poorly sorted with a gradation in size. For sand, we used sand extracted from the Hostun quarry and commercialized by *Silice et Kaolin*. We tested two samples: fine sand (volume average diameter of 0.33 mm) and medium sand (1.2 mm). Hostun sand is a natural sand widely used as a test material in French and European soil mechanics laboratories [2-3]. Contrary to most river sands, quarry sand is not rounded and are very abrasive. The chemical composition of the sand was silica 99.17%, Alumina 0.25%, iron oxide 0.17%, lime 0.14 %, magnesia 0.14%, soda 0.05%, potassium hydroxide 0.02%. Figure 2 gives the size distribution of the poorly-sorted coarse materials determined using either a Malvern granulometer (fine glass beads) or sieves (sand and medium glass beads).

B. Experimental Set-up and Procedure

To measure the size distribution of fine particles, we used a Malvern laser granulometer which records particle populations within the range $0.1-2000\ \mu\text{m}$. This apparatus measures diffraction and diffusion of a laser beam across a dilute suspension of particles in clear water (at a constant temperature). It then infers the size distribution of particles using specific methods (e.g. Fraunhofer's theory, assimilating particles to plate-shaped particles, for clayey materials). Different procedures were used to test the measurement sensitivity. For instance, to limit flocculation, ultrasonic waves and an anti-flocculation agent (a 5% sodium-hexametaphosphate solution) were used. Adding phosphate ions limits flocculation caused by the edge-to-face attraction since these ions preferentially bind to plate edges [Nicol and Hunter (1970)]. Ultrasonic waves are used to break large flocs. For the tested materials, these two methods did not significantly change the particle size distribution (we observed a deviation of less than 20%). Moreover, for kaolin, we compared the results obtained with the laser granulometer with those given by the usual sedimentation

	the laser granulometer with those given by the usual sedimentation test (as described in the French standard AFNOR NF P 94-068). Deviation in the mean size estimation between the two was less than 5%.
Nouveau paragraphe : description de l'appareil de mesure. On commence par donner le principe, utilisation, généralités.	Determining the yield stress using laboratory rheometers is somewhat difficult due to the presence of the coarse fraction. Given the sole objective of determining the yield stress, we preferred to use a semi-empirical method referred to as a "*slump test*". It involves filling a cylinder with the material to be tested, lifting the cylinder off and allowing the material to flow under its own weight. The profile of the final mound of material as well as the difference between the initial and final heights can provide an estimation of the yield stress. So far such a test has been extensively used to evaluate the workability of fresh concrete. More recently, attention has been drawn to the use of the slump test method as a means of measuring the yield stress of slurries. As such a test is new and almost confidential in rheometry, details on the experimental procedure and its limitations shall be presented.
Besoin d'informations supplémentaires Nouveau paragraphe : principe du calcul selon Pashias et Boger. Applications et domaine de validité, incertitude.	Pashias and Boger [3] **developed** an approximate theoretical model, inspired from an earlier model proposed by Murata, for inferring the yield stress τ_c from the difference (s) between the initial and final values. The authors **have found**: $$\frac{s}{h}=1-2\frac{\tau_c}{\rho g h}\left(1-\ln\left(2\frac{\tau_c}{\rho g h}\right)\right)$$ where h is the cylinder height, ρ the material density. They **tested** several mineral suspensions and compared the yield stress value deduced from slump measurements to the ones obtained using a vane rheometer. **Good agreement was found**. Schowalter and Christensen [Schowalter and Christensen (1999)] **used** a similar approach with fresh concrete and a conical slump test. Close examination of experimental data published by Pashias and Boger shows a deviation from the theoretical curve for yield stress values **in excess of approximately** $0.15\rho g h$. For yield stress values lower than $0.15\rho g h$ (or for $s/h>0.4$), **uncertainty** was less than 10% for their tests. The explanation of the deviation for higher yield stress values lies perhaps in the weakness of the assumption on the elastoplastic behavior for very cohesive materials.(…)
	III EXPERIMENTAL RESULTS
Description des données : on commence par se référer aux figures. On indique le contenu et le traitement des données effectué. On donne la tendance générale, puis les résultats particuliers.	Figs 6 (well-sorted materials) and 7 (poorly sorted materials) report the logarithmic variation of the yield stress as a function of solid concentration in the case of unimodal suspensions. For both figures, we have scaled the solid concentration by the maximal value $\phi_m \approx 0.635$. This value is suitable for suspensions of perfectly monosized spherical particles. For irregular grains or particles with a gradation in size, such a value is approximate. A monotonic increase of the yield stress for increasing solid concentrations can be seen for both figures. This behavior is very similar to that observed for the viscosity of force-free particle suspensions within a Newtonian fluid. Apart from this common important feature, well-sorted and poorly sorted materials behave differently. We will first review the main characteristics for each material class, then examine the differences between them.(…)

Dans la comparaison avec les modèles, on donne l'équation considérée, ses paramètres, et le résultat. C'est seulement après qu'on compare avec les données et il fait mention de manière détournée à la figure.	material class, then examine the differences between them.(…) **IV DISCUSSION** (…) First we extended the empirical model proposed by Wildemuth and Williams to the present context, where the interstitial fluid was a viscoplastic fluid. In this case, the yield stress provided by Eq. (11) must be understood as a contribution of coarse particles to the bulk yield stress. We have thus considered that the bulk yield stress can be expressed as: $\tau_c(\phi)=\tau_k(\phi_k)\left\{1+\alpha\left[(\phi/\phi_0-1)/(1-\phi/\phi_\infty)\right]^{1/m}\right\}$ is the yield stress of the kaolin dispersion, α and m are two parameters to be fitted. Here we can consider that $\phi_0=\phi_k$ and $\phi_\infty=1-\phi_k$. The least square-method gave $\alpha=0.11$ and $m=0.77$. As shown in Fig. 11, this model provides results, which fit our data well over the whole range of concentrations. Other expressions tested for fitting experimental data can also give interesting results, though less complete. (…)

3.6. La conclusion

3.6.1. Principe

De même qu'une dissertation, une bonne conclusion récapitule les principaux résultats et offre des perspectives ou propose des idées d'approche ou de solution face à des problèmes rencontrés. La conclusion peut être intitulée de diverses manières : « conclusion », « conclusions », « concluding remarks », etc.

3.6.2. Exemple

La conclusion commence ici par indiquer le principal objet de l'article : un modèle théorique. On développe ensuite dans les grandes lignes le contenu du modèle en insistant sur les similarités et les différences avec d'autres modèles. A noter qu'ici la différentiation n'est pas marquée par un adverbe « but » ou une locution « contrary to previous models, mais introduite par une négation « this combination is not ». Le principe du calcul des deux contributions élémentaires est donné. A noter la symétrie de construction avec « for ». Dans cette description du modèle, on donne des jalons permettant de relier les concepts introduits avec des pratiques connues. Par exemple ici « As for » et « Contrary to »	In this paper, we have presented a frictional-collisional model. **In the same way as** previous models developed for that purpose, the bulk stress tensor is divided into frictional and collisional contributions. This combination **is not** a simple addition since the two contributions are strongly related via the kinetic energy balance equation. Stress generation is marked by profoundly non-local processes since both friction and collision are associated with length correlations over several particle diameters. **For friction**, we describe this non-local character in the same way as for pressure in incompressible fluids by introducing a pressure term, which must be determined by solving the motion equations. **For collision**, we ascribe a significant role to energy dissipation. Their effects are strongly dependent on the local balance between competent and weak fractions. **As for the thickness of the viscous boundary layer in a turbulent flow**, we have considered that the collisional contribution only depends on a dimensionless number (the collisional number). Their variations are governed by the kinetic energy balance. **Contrary** to simple fluids, several mechanisms are involved in energy dissipation. Due to high concentrations, the classical mechanism of transformation from mechanical energy into heat (thermal motion) probably has limited effects in the energy dissipation. **Here** we have considered an extreme approximation:

Enfin on rappelle l'hypothèse centrale du modèle et ce à quoi elle correspond ou à quel domaine d'application elle peut s'appliquer. Il s'agit d'une clé de voûte, d'où le fait qu'elle soit rappelée.	dissipation. **Here** we have considered an extreme approximation: the assumption of a constant energy dissipation rate (per unit volume). **This corresponds** to the case of gravity-driven flow down an inclined channel.
Après une description du modèle, on récapitule les principales prédictions, que l'on compare à des résultats théoriques et expérimentaux publiés. A noter le temps des verbes au présent pour les résultats de l'article.	For shallow granular flows (namely for $h/R = O(1)$), the normal stress due to the particle weight is low and accordingly it is expected that the regime is collisional. For thick enough flows ($h/R > 20$), the collisional regime transforms into a frictional-collisional one. In this paper, this is justified by considering the dimensionless Coulomb number: for the collisional regime, Co decreases as $H^{-1/2}$ and thus the frictional-collisional is achieved for large flow depth. Anderson and Jackson [12] **also found** a significant change in the discharge curve ascribed to the transition from a collisional regime to a frictional-collisional regime. The main finding of our model concerns the linearity of the relation between flow rate and flow depth. **This point and others are in agreement with** experimental data published in the literature.
Le troisième paragraphe vise à faire un bilan objectif du modèle. Plusieurs termes montrent que les auteurs prennent de la distance face à leur modèle en insistant sur son caractère approximatif. Ils indiquent également des pistes à examiner en priorité pour affiner le modèle, le valider ou l'infirmer. A noter les verbes « should pay », « must be able », « should be », montrant la suggestion et la possibilité. En dernier lieu, les auteurs signalent un problème théorique intéressant.	The present theory is a **very crude** mean-field **approximation**, which **tries** to capture the expected features of particle networks in granular flows and the chief mechanisms of energy dissipation. Improvements or counter-arguments should be brought by experiments and numerical simulations in the coming months. **Notably such tests should pay attention** to the dynamic characteristics of populations (typical times, evolution, dissipation rate in each population). **Furthermore**, numerical simulations must be able to **specify** the pair distribution functions for each population and provide clues about the relationship between these functions and the flow features. **Lastly** the role of the granular temperature both in stress generation and energy dissipation **should be better specified. An interesting problem** is granular temperature diffusion within the clusters of the weak fraction and its influence on the strong fraction.

3.7. Les remerciements

3.7.1. *Principe*

Les remerciements visent à remercier toutes les personnes et tous les organismes ayant prêté leur soutien à la réalisation du travail. On peut également citer des personnes qui ont indirectement concouru au travail, par exemple en faisant des commentaires constructifs sur l'article ou en fournissant des données, des conseils, etc. En revanche, on ne mentionnera généralement pas les personnes telles que les « referees », le correcteur anglais, qui ont certes aidé à la rédaction de l'article, mais qui n'ont pas contribué sur le contenu réel. De même, les soutiens moraux (la famille, etc.) ne sont pas usuellement mentionnés. Aucun acronyme ne sera employé.

3.7.2. *Exemple*

	Acknowledgments This study was supported by the Cemagref and funding was

On commence en général par remercier les financeurs en citant le nom des organismes, puis les personnes ayant contribué au travail, enfin celles ayant aidé à la rédaction de l'article.	provided by the Institut National des Sciences de L'Univers of the CNRS (PNRN 99 29 CT). Additional support from the European programme *Debris Flow Risk* (grant No ENV4-CT96-0253 DG12-D) is gratefully acknowledged. I am grateful to Pascal Moucheront, François Chevoir, Emmanuel Azanza, Jacques Terrières for their help in measuring the density and velocity profiles. I thank Philippe Coussot and Pierre Evesque for their valuable comments and encouragement. Michaël Prochnow provided Figure 1. I also thank Stuart Savage for valuable discussions.

4. Mise en forme d'un article

La mise en forme d'un article importe presque autant que le contenu. Voilà ce qui est écrit à ce propos dans la rubrique sur la politique éditoriale de l'*American Institute of Physics* : « *les auteurs apportent en général beaucoup de soin dans le contenu d'un article, mais parfois quand ils préparent le manuscrit, ils ne suivent pas certaines règles élémentaires requises pour une publication rapide et un rendu satisfaisant des travaux publiés. Un article scientifique représente l'aboutissement d'une recherche conséquente, qui a nécessité beaucoup de temps et d'énergie de la part de leur auteurs, de leurs associés, et de leur laboratoire. Par égard pour leurs efforts, les auteurs sont censés apporter quelque attention à la préparation du manuscrit final car celui-ci ne requiert qu'une fraction du temps et de l'énergie consacrés à leurs recherches. Par conséquent, il n'est pas surprenant que l'apparence d'un manuscrit reflète non seulement l'opinion qu'a un auteur du journal dans lequel il soumet son article, mais également du respect qu'il a de son propre travail. Ni les relecteurs, ni l'éditeur ne mesurent la qualité d'une contribution par l'apparence d'un manuscrit. Toutefois, inévitablement, leur première impression, qu'elle soit bonne ou mauvaise, peut avoir quelque influence sur le soin avec lequel ils liront l'article. En outre, il est essentiel que l'article soit écrit dans un bon anglais (américain) scientifique. Les articles qui ne satisfont pas à ces critères, ne seront pas transmis pour relecture et seront soit rejetés directement, soit retournés à leurs auteurs pour qu'ils les soumettent de nouveau* ».

Un manuscrit envoyé dans une revue doit donc être impeccable non seulement sur le fond mais également sur la forme, ce qui implique que la ponctuation, les équations, les notations scientifiques, les figures, tableaux, légendes, les références bibliographiques, la mise en page, et naturellement l'anglais soient irréprochables.

4.1. Ponctuation

La ponctuation de l'anglais est généralement différente du français :

- la virgule, le point-virgule, les deux points, le point d'exclamation, le point d'interrogation sont collés au mot qui les précède et sont suivis d'un espace ;
- le point final est suivi de deux espaces (il est collé au mot qui le précède) ;
- les guillemets se saisissent comme cela " "et non « » ou " ;
- le symbole / (signifiant « ou ») séparant deux mots ne doit pas être décollé des mots qui l'entourent. Ainsi « and/or » ;
- les abréviations latines viz. (*videlicet*), e.g. (*exempli gratia*) et i.e. (*id est*) sont suivies d'une virgule et ne sont pas en italique ; les lettres ne sont espacées d'un espace. L'abréviation « *et al.* » (*et alii*) est toujours en italique. L'abréviation vs. (*versus*) n'est pas en italique ;

– les locutions et adverbes « for instance », « in particular », « namely », « respectively », « that is », and « say » sont suivis d'une virgule ;

– comme en français, une énumération doit être correctement ponctuée. Ainsi, « a, b, and c » est une liste simple, de sens différent de « a, b and c » ;

– un symbole n'est généralement pas entouré de virgules sauf s'il se situe à la jonction de deux coordinations. Ainsi « the granular temperature T is defined as » et non « the granular temperature, T, is defined as » ;

– en général, on préfère utiliser des crochets plutôt que des parenthèses si le texte entouré comporte déjà des parenthèses. Par « As shown in Batchelor's theory [see Eq. (1)] … » ;

– après un double point, il n'y a en général pas de majuscule mais on tolère l'usage pour les phrases complètes. Ainsi « As device, we used: a channel and two rheometers ». En revanche, les majuscules sont obligatoires si plus d'une phrase dépendent du double point. « We used the following approximations: (1) The finite size effect is neglected. (2) Variations in bulk density are assumed to be small ».

– il n'y pas de double point après le verbe « to be » : « the velocity components are 0, $u(y)$, and 0. » ;

4.2. Equations – utilisation de LaTeX

Les règles générales de mise en équation sont identiques à celles du français. Attention certaines revues ont des préférences dans la numérotation des équations, les équations dans le texte, le format des fractions rationnelles (par exemple ½ au lieu de $1/2$), etc. Mais cela est souvent d'importance moindre et sera corrigé par l'équipe de production avant envoi à l'impression. Quelques erreurs classiques :

– non respect des ordres de parenthèses : $u = q/Bh$ signifie $u = \frac{q}{B}h$, sinon il faut écrire $u = q/(Bh)$;

– la forme $x/y/z$ est ambiguë donc à proscrire ;

– parenthèses inutiles : $\sin\pi = 0$ et non $\sin(\pi) = 0$, mais $\sin(\pi/2) = 1$;

– majuscules mal employées : $\tan\theta$ et non $\mathrm{Tan}\,\theta$, $\exp x$ et non $\mathrm{Exp}\,x$;

– le foisonnement de parenthèses : $\left\{\left[(x)^2\right]^3\right\}^4 = x^{24}$ et non $(((x)^2)^3)^4 = x^{24}$. Outre les parenthèses, crochets, accolades simples, il y a aussi des symboles accentués en gras qui sont disponibles.

Par ailleurs on veillera à ne pas inclure d'équations trop longues dans le texte : 25 caractères est un maximum. Les anglo-saxons considèrent les équations numérotées (« displayed equations ») comme du texte, donc elles suivent les mêmes règles de ponctuation que du texte normal. Dans la mesure du possible et selon le style de la revue, on prendra soin à ne numéroter que les équations dont on a usage. Dans les équations numérotées, on préfère les fonctions rationnelles de la forme $\frac{a}{b}$ alors que dans le corps du texte on écrit plutôt a/b ou ab^{-1}. Dans le tableau 2, on rappelle les significations des principales notations scientifiques.

= (?)	bien plus petit que (resp. plus grand que)
$\approx$	à peu près égal
:	asymptotiquement égal
$O(1)$	de l'ordre de 1
$\propto$	varie comme, est proportionnel à
A^*	conjugué de A
${}^T A$, $\bar{A}$, A^T	transposée de la matrice A
$\bar{A}$	valeur moyenne de A
$\hat{\mathrm{k}}$	vecteur normé $\hat{\mathrm{k}} = \mathrm{k}/k$
$\rightarrow$	tend vers
$\times$	produit vectoriel
	indication d'une dimension : “a 3×3 matrix”
	notation scientifique : 3.2×10^{-2}
	grossissement : $3\times$
$\mathrm{x}\cdot\mathrm{y}$	produit scalaire x par y
	(attention ne pas confondre le point centré du produit scalaire avec le séparateur décimal)
$Al_2 0_3 \cdot 2SiO_2 \cdot 2H_2 0$	séparateur dans les composés chimiques

Tableau 2 : rappel des principales notations.

Hormis si l'on écrit l'article sous un format LaTeX, il est recommandé d'utiliser systématiquement un éditeur d'équation dans la formulation des équations et symboles contenus dans un article. Si on utilise Microsoft WORD, l'éditeur d'équation standard donne satisfaction dans la majorité des cas, mais il peut être utile de disposer d'un logiciel plus performant, gérant des styles et permettant des conversions aisées (sous un autre style ou bien dans un langage de type LaTeX ou MathML), comme MathType (version améliorée de l'éditeur standard de WORD).

Pour diverses raisons, on peut être amené à utiliser LaTeX. Par exemple, cela est de plus en plus vivement recommandé par certaines revues de physique et de mécanique. Ainsi, pour les revues de l'*American Physical Society*, les auteurs doivent en principe débourser 80 $ par page si leur article n'est pas soumis par voie électronique en utilisant un format LaTeX pour le texte et un format PostScript pour les figures. Certains éditeurs n'acceptent que des fichiers en LaTeX. Naturellement, pour qui est habitué aux traitements de texte modernes, l'utilisation d'un langage compilé comme LaTeX peut sembler un retour en arrière et une épreuve terrifiante. Pas de panique, il y a plusieurs solutions qui n'impliquent pas d'apprendre LaTeX par cœur :

- il existe des programmes qui convertissent des fichiers de traitement de texte en code LaTeX. Ce sont presque exclusivement des logiciels commerciaux (compter 5000 FHT). Un comparatif des différents produits est disponible sur les sites : http://www.ind2.polymtl.ca/latex/latex.html#LaTeX et http://www.eerie.fr/~gerault/faq-tex-french.html#4.3. Attention, les transpositions réalisées par ces logiciels ne sont pas toujours bonnes (notamment pour les tableaux, la bibliographie, etc.).
- A partir d'une chaîne de logiciels classiques tels que Word (traitement de texte), EndNote (gestionnaire de bibliographie, www.niles.com), et MathType (éditeur d'équations, www.mathtype.com), il est tout à fait possible de générer rapidement des fichiers LaTeX corrects. A cela, il faut ajouter :
  - Un compilateur LaTeX. Outre les compilateurs commerciaux, on peut trouver sur Internet des logiciels gratuits de très bonne qualité. On peut citer notamment l'excellent WinGut de l'association Gutenberg, regroupant un compilateur, un éditeur (Emacs), et un logiciel de visualisation (Dviwin), pour des PC sous Window (95–2000). Ce logiciel est téléchargeable (14 Mo) à partir de : http://www.gutenberg.eu.org/. Le principe est le suivant : on écrit (au moyen d'un éditeur de texte comme NotePad ou d'un traitement de texte de type Word) un fichier au format TEX (fichier en *.tex). On compile ce fichier à l'aide d'un compilateur, qui crée un fichier *.dvi ("*device independent*", c'est-à-dire indépendant de la plate-forme utilisée : PC, Mac, Unix, etc.). ce fichier peut être ensuite visualisé à l'aide d'un logiciel spécifique (par exemple Dviwin fourni par Gutenberg), puis transformé en fichier PostScript (*.ps) avant impression (sur une imprimante reconnaissant le langage PS). Pour se former rapidement à LaTeX, on peut télécharger une série de très bons documents de formation, notamment en français. Aller voir le site : http://www.loria.fr/services/tex/general.html.
  - Un programme de visualisation, d'impression PS (PostScript), et de transformation des fichiers PS en EPS (Encapsulated PostScript). Pour cela on peut utiliser un shareware tel que *GhostView* (téléchargeable depuis : http://www.cs.wisc.edu/~ghost/).
  - Un émulateur d'impression PostScript, qui va permettre de transformer n'importe quelle figure (réalisée avec n'importe quel logiciel de dessin, tabulateur, etc.) en fichier PS. On pourra télécharger le pilote d'Adobe aps102fre.exe depuis le site de cette compagnie (www.adobe.com).

Personnellement, je procède comme suite :

1. J'écris mon texte avec Word, j'utilise MathType pour les équations, et EndNote pour la bibliographie.

2. Une fois que l'article est achevé, je convertis automatiquement toutes les équations en code LaTeX à l'aide de la commande "conversion LaTeX – AMS-Tex" de MathType. Ainsi, une équation de la forme $x^3 = 2$ est transposée automatiquement en code LaTeX : $x^3=2$.
3. Je convertis ma liste bibliographique avec EndNote en code lisible par le compilateur (séquence de lignes \cite{#} et \bibitem{#}).
4. Le fichier texte Word est inclus dans un fichier Texte (en générale, les revues fournissent des modèles de fichier, nommés template.tex, qui contiennent les listes d'instructions nécessaires en tête de document). Les titres sont incorporés à l'aide de la commande \section{#} (ou \subsection{#}, etc.). Le fichier est sauvegardé sous format Texte (*.txt), puis on modifie l'extension "txt" en "tex" pour que le fichier soit reconnu par le compilateur.
5. Pour les figures, je les inclus dans un fichier Word séparé. Je les transforme en fichier PostScript en utilisant la commande *Impression*, dans laquelle la case "Impression dans un fichier" a été cochée. Comme imprimante, on choisira le pilote aps102 d'Adobe ("generic postscript printer" devant apparaître dans le menu déroulant des imprimantes). On paramétrera l'imprimante (touche "Propriétés…" de la boîte de dialogue "Impression" en choisissant l'option Encapsulated PostScript du menu PostScript. Ce faisant, l'impression crée en fait un fichier d'extension ".prn". Il faut ensuite utiliser GhostView pour transformer ce fichier en fichier EPS (utiliser la commande "PS vers EPS" du menu déroulant "Fichier"). A noter que certains logiciels (comme Mathematica) génèrent directement des figures EPS, mais malheureusement la plupart des logiciels génèrent un fichier PS dont le code ne permet pas d'extraire par la suite un fichier EPS ou bien dont l'encodage en EPS est simplement désastreux, d'où cette procédure avec Word, qui est longue mais fiable.
6. On compile le fichier avec un compilateur. On obtient entre autres un fichier d'extension ".dvi", que l'on transforme en fichier PS ; avec WinGut, il suffit de lancer l'impression, qui en fait ne génère aucune impression physique sur une imprimante, mais fournit un fichier PS prêt à imprimer sur une imprimante reconnaissant ce langage (typiquement toutes les imprimantes laser).

On écrit l'article sous Word	**Squares and disks of equivalent area** Christophe ANCEY Cemagref **Introduction** It can be shown that the are of a disk is $A = \pi R^2$, where R denotes the disk. A square of length L has the same area as this disk if $L^2 = \pi R^2$. This implies that we must take $L = \sqrt{\pi} R$ for the two objects to have the same area.
On convertit les équations en codes lisibles par le compilateur à l'aide de la commande	**Squares and disks of equivalent area**

prévue dans le logiciel MathType	Christophe ANCEY Cemagref **Introduction** It can be shown that the are of a disk is $A = \pi R^2 $, where R denotes the disk. A square of length L has the same area as this disk if $L^2 = \pi R^2 $. This implies that we must take $L = \sqrt \pi R$ for the two objects to have the same area.
On incorpore le résultat dans un fichier Texte modèle (ici un modèle fourni par l'APS, où toutes les commandes de tête sont déjà écrites). En gras, on a ajouté le texte qui a été ajouté à ce modèle. On sauvegarde. On modifie l'extension *.txt en *.tex. On lance ensuite la compilation.	\documentstyle[aps]{revtex} \begin{document} \title{**Squares and disks of equivalent area**} \draft \author{**Christophe ANCEY**} \maketitle **\section{Introduction}** **It can be shown that the are of a disk is $A = \pi R^2 $, where R** **denotes the disk. A square of length L has the same area as this disk if $L^2 = \pi R^2 $. This implies that we must take $L = \sqrt \pi R$ for the two objects to have the same area.** **\end{document}**

4.3. Les notations scientifiques

Outre les règles propres à la formulation des équations, on retiendra également les règles suivantes de notation, qui sont assez générales :

– les vecteurs et tenseurs sont en gras, les variables en italique, les fonctions et les chiffres en caractère normal : $\mathrm{u} = \left(0,1,\exp(-x^2)\right)$;

– le séparateur décimal est le point et non la virgule. Ainsi on écrit 1.43×10^{-2} le nombre 0,0143. Attention $1,43.10^{-2}$ est difficilement compréhensible pour un anglo-saxon. Cela pourrait en effet signifier $1430\times0.01=14.3$!

– les unités à employer sont celles du système international même si les anglo-saxons continuent à utiliser leur système de mesures. Rappelons notamment les règles sur les abréviations : pas de point, la casse est variable. Ainsi : on écrit « min » (pour minute) et non « min. » ou « mn », « kPa » et non « KPa » (pour kilopascals). Exception : « Ω » et non « Ohm » ;

– en général, surtout dans les revues américaines, aucune unité n'est écrite en entier sauf dans les expressions du genre « a few centimeters ». Ainsi « Over the last 30 yr, there has been … »

– on fera attention, comme pour les équations, aux barres de fraction : « $\mathrm{J/cm^2/kg}$ » n'est pas correct. On écrira plutôt « $\mathrm{J/(cm^2\ kg)}$ » ou mieux encore $\mathrm{J\,cm^{-2}\,kg^{-1}}$;

- de même qu'en français, il y a toujours un espace entre l'unité et la valeur : « 2 mm » et non « 2mm ». Exceptions : « 1% » (au contraire du français), « 1° », et « 1°C » ;
- on fait référence à une figure et à une équation le plus souvent par « Fig./Figs. » et « Eq./Eqs. » sauf en début de phrase où généralement on écrit en toutes lettres. Il en est de même pour les sections : « Sec./Secs. ». En revanche les tableaux sont généralement référencés à l'aide de « Table », suivi d'un chiffre romain. En bref, la notation la plus classique est la suivante : « In Eq. (3), we replace x by $A x y^2$. The resulting curve has been drawn in Figs. 2 and 3 while the values of A have been tabulated in Table I. » ;
- on ne commence en général pas une phrase par un symbole : on écrira « in most case, we found $x = 1$ » au lieu de « $x = 1$ has been found in most cases ». Cela est à proscrire totalement si la phrase précédente se termine par un nombre ;
- les adjectifs tirés de noms propres commencent par une majuscule : « the Newtonian viscosity », « the Coulombic friction coefficient ». Exception : les unités ; ainsi : on écrirait « 50 pascals » ;
- un symbole correspond généralement à la première lettre du terme qu'il désigne. Par exemple, le symbole pour désigner l'énergie cinétique est E_K (« kinetic energy ») préférentiellement à tout autre symbole. On prendra garde à ne pas utiliser les mêmes symboles qu'en français (ici E_C) ;
- les noms de programme, d'organisme, etc. sont généralement écrits en petites capitales : par exemple « MATHEMATICA » ;
- les acronymes sont à expliciter lors de la première utilisation et doivent être construits en prenant la première lettre de chaque mot du groupe. Ainsi « we used nuclear magnetic resonance (NMR) techniques to measure… », « the two-dimensional (2D) motion of », etc. ;
- enfin, il convient en général de respecter les notations en usage dans le domaine. Ainsi chez les physiciens, le rayon de la particule est souvent noté a et non R ou r. Cette règle n'a pas de caractère obligatoire mais cela facilite la lecture des gens du domaine et évite les contresens. De même on se limitera dans la mesure du possible aux alphabets latin et grec. On utilisera correctement les polices de caractère. L'italique est généralement réservé aux variables, aux fonctions notées avec un seul caractère (e, i), les mots d'origine étrangère, et les citations de propos tandis que les caractères droits romans sont pour le texte, les chiffres, les fonctions, les symboles et composés chimiques (sauf alliage), les unités. Une police « sans serif » peut être requise pour certains caractères (notamment les notations tensorielles et quelques opérateurs). Les symboles mis en gras désignent des vecteurs.

Attention toutefois aux règles spécifiques à certaines revues. Ainsi dans les revues de l'*American Physical Society*, il n'est pas possible, sauf exception, d'employer un symbole composé de plus d'une lettre. Ainsi N_{Re} au lieu de Re pour le nombre de Reynolds. De même le symbole de différentiation est le « d » droit, mais certaines revues préfèrent d. Les dérivées matérielles (convectives, de Jaumann, etc.) sont souvent notées $\mathrm{D}()/\mathrm{D}t$, mais il est préférable de l'expliciter clairement dans le texte.

4.4. Les figures, les tableaux, et leur légende

Toute inclusion (figure, tableau) doit être citée explicitement dans le texte et nécessite une légende, qui doit être concise. Une légende ne doit pas expliquer ou interpréter l'inclusion (il faut placer cette explication dans le corps du texte). Elle n'est pas nécessairement constituée de phrases ; des groupes nominaux peuvent suffire. Toute abréviation ou symbole introduit dans le tableau et non explicité dans le corps du texte doit être défini dans la légende. Chaque légende doit commencer par un titre en majuscules (suivi d'un point) : « FIG. 1. » (parfois « FIGURE 1. »), « TABLE I. ».

Le format des tableaux (lignes, espacement des colonnes, etc.) dépend généralement de la revue. Il peut être facilement adopté si on dispose d'un modèle (très fréquent sous LaTeX) de format de la revue. En tout cas, cela sera arrangé par l'équipe de production avant impression du journal.

Il est recommandé de dimensionner les figures à un format papier de type A4. Un soin particulier doit être apporté à la réalisation des figures. Cela est grandement facilité de nos jours par des logiciels spécifiques de divers type (d'Excel à Origin en passant par Mathematica), offrant des sorties papier de qualité. Faire attention à :

– la taille des caractères et leur homogénéité dans toute la figure (axe, légende des courbes, etc.) ;
– l'épaisseur des traits pour les axes et les points ;
– les couleurs employées (des nuances de gris sont acceptables) ;
– le nom des axes et les unités employées indiquées entre parenthèses. Par exemple « θ (deg.) » ;
– la numérotation des figures. Elle se fait à l'aide de chiffres arabes dans l'ordre d'apparition des figures dans le corps du texte. Si la figure contient des sous-parties, celles-ci sont numérotées de la manière suivante : (a), (b), etc. sur la figure complète et référencées dans le texte comme Fig. 1(a), etc.
– le cadre de la figure. Il est souvent plus clair d'avoir un cadre autour de la figure plutôt que deux axes (ordonné et abscisse) ;
– l'échelle. Le choix d'une échelle linéaire ou logarithmique n'est pas innocent. Notamment l'échelle logarithmique ou semi-logarithmique s'impose lorsqu'on travaille avec des données s'étendant sur plus d'un ordre de grandeur, lorsqu'on cale des fonctions puissance, exponentielle ou logarithmique. Elle ne doit pas être utilisée pour atténuer une incertitude expérimentale, un écart entre points expérimentaux et courbes théoriques, etc. ;
– les bornes des axes. Les valeurs minimale et maximale des axes doivent s'ajuster au contenu de la figure.

Exemple

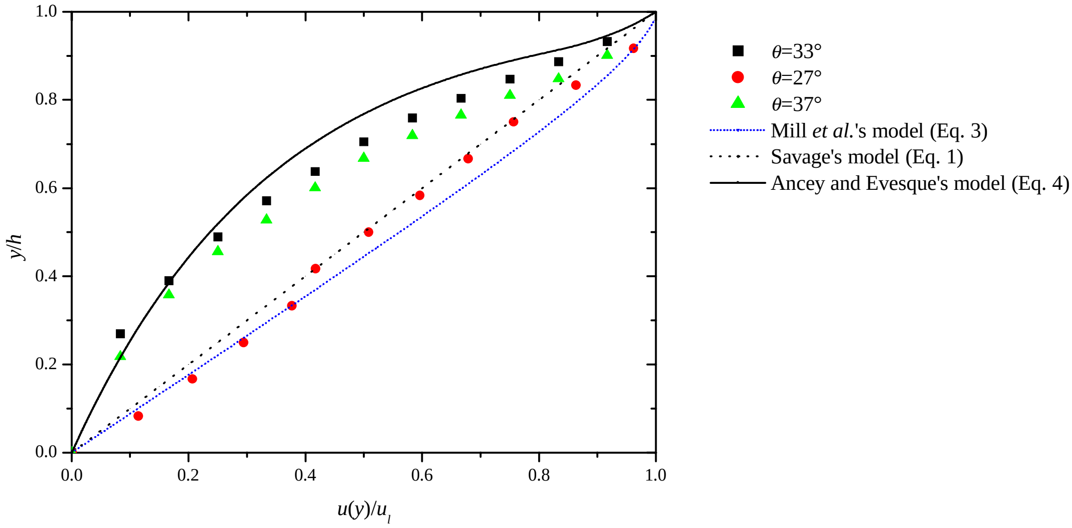

Fig. 19. Dimensionless velocity profiles for 1-mm glass beads flowing down a 48-mm-wide channel at three different slopes and for various mass flow rates. For $\theta = 27°$, $h = 15$ mm ($q_* = 61$, $u_l = 0.66$ m/s), $\theta = 33°$ $h = 14$ mm ($q_* = 111$, $u_l = 0.86$ m/s), for $\theta = 37°$ $h = 8.1$ mm ($q_* = 111$, $u_l = 2.1$ m/s). Theoretical predictions are also reported: Savage's model [Eq. (1), with $e = 0.63$, $\varphi = 26.5°$, $u_l = 3.5$ m/s], Mills *et al.*'s model [Eq. (1), with $\beta = 0.0002$, $\varphi = 26.5°$, $u_l = 1.11$ m/s] are applied using $\theta = 27°$ and $q_* = 61$. Ancey and Evesque's model [Eq. (4), with $A = 34$, $\varphi = 26.5°$, $u_l = 2.74$ m/s] is applied using $\theta = 33°$ and $q_* = 111$.

4.5. Les références bibliographiques

En général, il convient de fournir des références dès lors que dans le texte, on mentionne un fait, un résultat, une observation obtenus par ailleurs. Certains auteurs sont très prolixes dans la fourniture de références, d'autres très sobres, et c'est, je dirais, une stratégie personnelle. En revanche, il est nécessaire de respecter le format et le type de référence propres à la revue. Ainsi certaines revues tolèrent des références à des travaux non publiés (articles soumis, rapports internes, etc.) tandis que d'autres ne le permettent pas. Pour le format bibliographique, il faut se référer au format demandé par la revue. Certains logiciels, comme EndNote, permettent de gérer efficacement la bibliographie, aussi bien par la constitution d'une base de données qu'en permettant le formatage des références avec un style prédéfini pour un document WORD ou sous LaTeX.

4.6. La mise en page

La mise en page (format des titres de section, appellation des annexes, etc.) dépend de chaque revue, mais dans la majorité des cas, il est demandé lors de la soumission de suivre la disposition suivante :

1. le texte de l'article (titre, auteurs, adresses, éventuellement mots-clés ou schéma de classification, résumé, développement, notes de bas de page, conclusion) ;
2. les annexes éventuelles ;
3. les remerciements éventuels ;
4. la liste des références bibliographiques ;
5. la liste des tableaux avec leur légende sur une feuille séparée ou au-dessus/ au-dessous de chaque tableau ;
6. les légendes des figures ;
7. les figures.

4.7. L'anglais

Cela n'est pas nécessairement un gros inconvénient de ne pas être anglo-saxon pour rédiger un article scientifique en anglais. D'une part, l'anglais scientifique est relativement simple. D'autre part, ne maîtrisant pas toutes les subtilités de la langue, les auteurs sont souvent contraints d'acquérir un anglais, sobre, fait de phrases courtes, et donc globalement efficace et plus scientifique qu'un anglais littéraire trop riche. Les principaux écueils à éviter pour un auteur français sont :

– une mauvaise maîtrise des termes techniques de son domaine. Elle est en général assurée par la lecture d'articles du domaine en question et ne peut s'improviser ou s'acquérir par le dictionnaire. Ainsi, la traduction anglaise d'un terme technique comme « écoulement simplement cisaillé » est « simple shear flow » et non « simply sheared flow » ;

– la connaissance insuffisante des termes généraux et constructions scientifiques. Là encore cela peut s'acquérir à travers la lecture de l'article (il peut être utile de noter les constructions typiques que l'on trouve dans les articles), mais également (et plus efficacement peut-être, tout au moins au début) en s'aidant d'ouvrages spécialisés :

  – M. Défourneaux : « *Do you speak science* ? », 2° édition (Dunod, Paris, 1991) 162 p. Cet ouvrage offre une bonne introduction à la communication écrite et orale en anglais, avec classées par thèmes, les traductions et prononciations d'un certain nombre d'expressions,

  – A. Paquette et B. Roehner : « *Science in English* » (Belin, Paris, 1991) 257 p. Cet ouvrage propose des exemples de constructions syntaxiques, classés par thème (explication, illustration, clarification, etc.),

  - J.-P. Soula, A. Bellecourt, F. Fabre, et R. Dunn : « *Communiquer en anglais scientifique* » (Presses Pocket, Paris, 1992) 220 p. + 1 cassette audio. Cet ouvrage traite à la fois l'anglais scientifique oral (exposé, prise de parole, conversation) et écrit (article, correspondance). Il est assez pédagogique dans la logique de l'anglais scientifiques et les différences avec le français,
  - J. Upjohn, S. Blattes, V. jans : « *Minimum competence in scientific English* » (Presses Universitaires de Grenoble, Grenoble, 1991)254 p. C'est un bon ouvrage d'introduction à l'anglais scientifique. Il est bien appuyé sur l'exemple et permet d'acquérir à la fois le vocabulaire technique et les constructions syntaxiques appropriées ;

- une mauvaise connaissance de la concordance des temps. L'emploi et le sens du passé et du futur peuvent être significativement différents en anglais. Ainsi, en général on mettra au passé tout ce qui est relatif aux expériences (car elles sont finies au moment où l'article est écrit) : « we measured the mean velocity » et non « we have measured the mean velocity », qui signifie que l'action est encore en cours ;
- les faux-amis nombreux aussi en anglais scientifique. Ainsi « density » signifie « masse volumique » et non « densité » ;
- les traductions mot à mot. La traduction mot à mot d'expression est rarement possible. Ainsi « débit par unité de largeur » se traduit « discharge par unit width » et non « discharge per unity of width ». *A fortiori* la traduction mot à mot de phrases est à éviter. Par exemple, pour la phrase typique « en raison des difficultés que nous avons évoquées, nous avons préféré adopter une démarche pragmatique, simple mais efficace, consistant à mesurer directement la vitesse à la paroi. Nous avons pu le faire soit par traitement d'image, soit velocimétrie laser » , il serait très lourd d'écrire « Owing to the difficulties that we have evoked, we preferred to adopt a more pragmatic approach, simple but efficient, consisting in measuring the velocity directly at the sidewall. We could made it using either image processing or laser velocimetry. » même si elle est grammaticalement correcte. En anglais, on préféra une formulation plus simple avec une action déterminée par phrase. Par exemple : « These difficulties led us to adopt a pragmatic approach, which was simple **and** effective. This **involved measuring** velocity at the sidewall. Measurement was achieved either using image processing techniques or laser velocimety ». A noter : le découpage en deux phrases, le remplacement du « but » par « and » (il ne s'agit pas d'une opposition), la suppression de « directly », qui ne s'impose pas et qui n'apporte rien de plus, l'inversion de construction (introduction d'un passif), rappel du sujet et suppression de « could » (qui traduit en anglais réellement la possibilité) ;
- les lacunes de connaissance dans les construction spécifiques des adjectifs et verbes. Très souvent le français et l'anglais sont semblables, mais pas toujours. Ainsi « la valeur a été estimée à 4 » se traduit par « the value was estimated at 4 » ou « the value was estimated to be 4 » mais non « the value was estimated to 4 ».

Une révision de la grammaire peut être utile sur ces points. Des abrégés de grammaire se trouvent dans la plupart des dictionnaires anglais/ français. L'achat d'une grammaire détaillée ou d'ouvrages de révision (comme celui de L. Dahan : « L'anglais sans faute » chez Presses Pocket) est recommandé.

Attention si la revue est américaine, il faut se référer à l'orthographe américaine. Ainsi on écrit « behavior » et non « behaviour », « centered » et non « centred », etc. De même « setup » et non « set-up », « cutoff » et non « cut-off », « nonlinear » et non « non-linear », etc. sauf pour les mots composés d'un nom propre « non-Newtonian fluid », de plus de 2 mots « an up-to-date theory », ou construit avec semi « semi-infinite ». De même en américain, les constructions avec « half », « self » et « free » nécessitent un tiret : « a half-tube », « self-consistent », « worry-free ». Certaines fautes sont facilement corrigées par le correcteur de Word. Cela peut l'être plus complètement en recourant à un correcteur anglais si on lui précise par avance la revue visée. Cela le sera nécessairement avant l'impression.

Il est souvent dit que l'anglais préfère l'actif au passif et les verbes aux noms. Ainsi, il est souvent recommandé d'écrire « comparing Figs. 10 and 11 suggests that… » plutôt que « comparison of Figs. 10 and 11 suggests… » ou bien « Fig. 10 reports data obtained using… » plutôt que « Data obtained using (…) have been reported on Fig. 10 ». Cela est vrai mais il ne faut pas en faire une fixation, il faut surtout retenir que l'anglais préfère les constructions dynamiques (des verbes) et simples (l'actif).

De même qu'en français scientifique, on veillera à supprimer toutes les constructions d'introduction, qui fleurissent dans le texte, du genre « we can point out », « it should be noted that », « it is worth noticing that », et qui n'apportent rien. Il est en général préférable de mettre différemment en relief les facteurs importants. Par exemple « this leads to the striking result that », « interestingly », « amazingly », etc. qui apportent plus d'information.

Sur l'emploi de pronoms tels que « I », « we », l'usage a considérablement évolué ces dernières années même s'il reste quelques bastions. Auparavant, l'anglais scientifique ne tolérait pas le pronom personnel et il fallait recourir au passif ou bien à des formules impersonnelles comme « the authors observed ». Aujourd'hui, l'emploi des pronoms personnels est largement pratiqué et encouragé. En effet, dès lors que le sujet de l'action est clairement identifié (« we observed that ») ou qu'on souhaite introduire une nuance (« in my opinion, … »), l'usage d'un pronom personnel est vu comme plus correct et moins lourd. Se pose le problème d'un auteur signant seul un article. Doit-il écrire « we » ou « I » ? Cela dépend si l'opinion exprimée est celle de l'auteur tout seul ou d'un groupe de personnes dont l'auteur.

Avant tout soumission d'article, que cela soit dans une revue ou pour un colloque, on gagnera à faire corriger l'anglais par un correcteur professionnel. Personnellement j'ai recours à deux correcteurs :

Linda Northrup (américaine)
English Solutions
rue du Carlin
38500 Voiron

Harry Forster (anglais)
Interrelate
2, quai Saint Laurent
38000 Grenoble

Tél./ Fax : 04-76-66-16-01

Email : linda.northrup@wanadoo.fr

Tarif : 195 FHT/h

Points forts : correction directement sur le fichier WORD, délai d'intervention, soin, prestation d'ensemble

Tél./ Fax : 04 76

Email :

Tarif : 250 FHT/h

Points forts : expérience, soin, étendue des compétences

Point faible : très demandé donc délai pouvant être long

Seconde partie :

Politique éditoriale et conseils aux auteurs

Geophysical Research Journal

5. Guidelines to Publication of Geophysical Research

Since these guidelines were first adopted by the Publications Committee with the endorsement of the Board of Journal Editors, they have been adopted by several other scientific and engineering societies and one international scientific union. AGU's statement to a great extent was based *on «Ethical Guidelines to Publication of Chemical Research»* of the American Chemical Society (ACS). AGU acknowledges its appreciation to ACS for granting permission to quote extensively from that work. The Guidelines were first adopted in April 1988 and were last revised in March 1998.

5.1. PREFACE

The American Geophysical Union serves the geophysical community and society at large in several ways, among them by publishing journals that present the results of scientific research. The editor of an AGU journal has the responsibility to maintain the AGU guidelines for reviewing and accepting papers submitted to that journal. In the main, these guidelines derive from AGU's definition of the scope of the journal and from the community's perception of standards of quality for scientific work and its presentation. The guidelines that follow reflect a conviction that the observance of high ethical standards is so vital to the whole scientific enterprise that a definition of those standards should be brought to the attention of all concerned.

5.2. GUIDELINES

5.2.1. Obligations of Editors of Scientific Journals

1. An editor should give unbiased consideration to all manuscripts offered for publication, judging each on its merits without regard to race, gender, religious belief, ethnic origin, citizenship, or political philosophy of the author(s).
2. An editor should process manuscripts promptly.
3. The editor has complete responsibility and authority to accept a submitted paper for publication or to reject it. The editor may confer with associate editors or reviewers for an evaluation to use in making this decision.

4. The editor and the editorial staff should not disclose any information about a manuscript under consideration to anyone other than reviewers and potential reviewers. Reviews and reviewer identity can be shared with other Editors of AGU journals if the author consents to having the paper transferred. It is contrary to AGU policy for Editors to release reviews or reviewers' identity to Editors of non-AGU journals.
5. An editor should respect the intellectual independence of authors.
6. Editorial responsibility and authority for any manuscript authored by an editor and submitted to the editor's journal should be delegated to some other qualified person, such as another editor or an associate editor of that journal. Editors should avoid situations of real or perceived conflicts of interest. If an editor chooses to participate in an ongoing scientific debate within his journal, the editor should arrange for some other qualified person to take editorial responsibility.
7. Editors should avoid situations of real or perceived conflicts of interest. Such conflicts include, but are not limited to, handling papers from present and former students, from colleagues with whom the editor has recently collaborated, and from those in the same institution.
8. Unpublished information, arguments, or interpretations disclosed in a submitted manuscript should not be used in an editor's own research except with the consent of the author.
9. If an editor is presented with convincing evidence that the main substance or conclusions of a paper published in an editor's journal are erroneous, the editor should facilitate publication of an appropriate paper pointing out the error and, if possible, correcting it.

5.2.2. Obligations of Authors

1. An author's central obligation is to present a concise, accurate account of the research performed as well as an objective discussion of its significance.
2. A paper should contain sufficient detail and references to public sources of information to permit the author's peers to repeat the work.
3. An author should cite those publications that have been influential in determining the nature of the reported work and that will guide the reader quickly to the earlier work that is essential for understanding the present investigation. Information obtained privately, as in conversation, correspondence, or discussion with third parties, should not be used or reported in the author's work without explicit permission from the investigator with whom the information originated. Information obtained in the course of confidential services, such as refereeing manuscripts or grant applications, cannot be used without permission of the author of the work being used.
4. Fragmentation of research papers should be avoided. A scientist who has done extensive work on a system or group of related systems should organize publication so that each paper gives a complete account of a particular aspect of the general study.

5. It is unethical for an author to publish manuscripts describing essentially the same research in more than one journal of primary publication. Submitting the same manuscript to more than one journal concurrently is unethical and unacceptable.
6. An author should make no changes to a paper after it has been accepted. If there is a compelling reason to make changes, the author is obligated to inform the editor directly of the nature of the desired change. Only the editor has the final authority to approve any such requested changes.
7. A criticism of a published paper may be justified; however, in no case is personal criticism considered acceptable.
8. Only persons who have significantly contributed to the research should be listed as authors. The corresponding author attests that any others named as authors have seen the final version of the paper and have agreed to its submission for publication. Deceased persons who meet the criterion for co-authorship should be included, with a footnote reporting date of death. No fictitious name should be listed as authors or co-authors. The author who submits a manuscript for publication accepts the responsibility of having included as co-authors all persons appropriate and none inappropriate.

5.2.3. Obligations of Reviewers of Manuscripts

1. Inasmuch as the reviewing of manuscripts is an essential step in the publication process, every scientist has an obligation to do a fair share of reviewing.
2. A chosen reviewer who feels inadequately qualified or lacks the time to judge the research reported in a manuscript should return it promptly to the editor.
3. A reviewer of a manuscript should judge objectively the quality of the manuscript and respect the intellectual independence of the authors. In no case personal criticism appropriate.
4. A reviewer should be sensitive even to the appearance of a conflict of interest when the manuscript under review is closely related to the reviewer’s work in progress or published. If in doubt, the reviewer should return the manuscript promptly without review, advising the editor of the conflict of interest or bias.
5. A reviewer should not evaluate a manuscript authored or co-authored by a person with whom the reviewer has a personal or professional connection if the relationship would bias judgment of the manuscript.
6. A reviewer should treat a manuscript sent for review as a confidential document. It should neither be shown to nor discussed with others except, in special cases, to persons from whom specific advice may be sought; in that event, the identities of those consulted should be disclosed to the editor.

7. Reviewers should explain and support their judgments adequately so that editors and authors may understand the basis of their comments. Any statement that an observation, derivation, or argument had been previously reported should be accompanied by the relevant citation.
8. A reviewer should be alert to failure of authors to cite relevant work by other scientists. A reviewer should call to the editor's attention any substantial similarity between the manuscript under consideration and any published paper or any manuscript submitted concurrently to another journal.
9. .Reviewers should not use or disclose unpublished information, arguments, or interpretations contained in a manuscript under consideration, except with the consent of the author.

5.2.4. Obligations of Scientists Publishing Outside the Scientific Literature

1. A scientist publishing scientific results in the popular literature should be as accurate in reporting observations and unbiased in interpreting them as when publishing in a scientific journal.
2. The scientist should strive to keep public writing, remarks, and interviews as accurate as possible consistent with effective communication.
3. A scientist should not proclaim a discovery to the public unless the support for it is of strength sufficient to warrant publication in the scientific literature. An account of the work and results that support a public pronouncement should be submitted as quickly as possible for publication in a scientific journal.

5.3. Submitting Papers to AGU Journals

AGU editors welcome contributions from authors throughout the world. Several journals have editors in Canada, Europe, Asia, and Australia to help speed the publication process. The decision to accept a paper for publication is made by the journal editor solely on the basis of suitability of subject matter to the focus of the journal, originality of the contribution, and scientific merit as determined by peer review. Although reviewers and associate editors provide critical guidance through the review process, the editor has the sole right and obligation to decide what will be published by AGU.

For journals with more than one editor, authors may choose to send their manuscript to the editor they deem most appropriate. For specific submission information for each journal, consult the masthead of that journal or visit the AGU Journals Home Page, which contains short biographical sketches of the editors and information on how to contact them under «Meet the Editor.» Manuscripts must be double- or triple-spaced. Copies of all illustrations must accompany the manuscript.

Information on preparing papers for submission is published periodically in each journal and also is available via the World Wide Web at http://www.agu.org. Current addresses for submission can be found on the inside cover of the journal or via the Web.

Page Charges. There are no page charges for papers in Tectonics, Paleoceanography, and Global Biogeochemical Cycles, or for papers of eight or fewer pages in Water Resources Research (WRR). For papers in the Journal of Geophysical Research (JGR) or Radio Science if the author elects to have AGU typeset the paper, or if the author provides camera-ready copy and orders reprints. If the author provides camera-ready copy, but does not order reprints, there are no page charges.

Excess Page Fee. To encourage the submission of articles to AGU journals that are concisely written, an excess page fee has been established for JGR, Water Resources Research, and Radio Science. Although current page charge policies for these journals remain unchanged, papers that are longer than a specified number of pages will be charged an additional fee for each page beyond the target length set for that journal.

Providing Photo-Ready Copy. Four of AGU's journals are produced totally from photo-ready copy provided by the author: Geophysical Research Letter, Tectonics, Paleoceanography, and Global Biogeochemical Cycles. Authors may also provide photo-ready copy for JGR and Radio Science. After a paper has been accepted for publication, it is copy edited (except Geophysical Research Letters) at AGU headquarters. The marked manuscript is returned to the author with detailed instructions on how to prepare photo-ready copy, including final sizes for the illustrations. Authors can obtain samples of the instructions from AGU headquarters. LaTeX macros and templates for Word and Word Perfect have been developed to assist authors in preparing copy to AGU specifications.

Reprints. Authors may purchase reprints of articles published in any AGU journal. For JGR and Radio Science, authors who choose to pay the page charges and have AGU typeset the paper will receive 100 reprints without further charge.

Color Figures and Supplementary Materials. Color figures, oversize maps, and videotape, electronic, or microfiche supplements can be published upon approval by the editor. The author's institution must pay additional charges for these services. Current rates can be obtained from headquarters.

5.4. General Guidelines for Artwork

When the highest quality standards of your science are combined with artwork that clearly illustrates and summarizes your research, your article and the journal in which it's appearing are improved. The General Guidelines for Artwork are intended to provide an overview to assist you in designing figures that will enhance the presentation of your data. Submitting figures developed using these guidelines also will shorten production time, allow for efficient layout of your article in electronic and print products, and help ensure satisfactory reproduction in all media.

Since artwork follows a parallel track to text through electronic or hard copy production, it is essential that you submit final art with your accepted manuscript/file.The Production Department is available to advise you or answer any questions you may have.

Like many organizations, AGU is undergoing a transition to fully electronic media for submissions and publication.

Whether you are submitting electronic files or hard copy, the basic artwork requirements are: For journals that exist as both print and electronic products: Figures should be as close as possible to the size they will appear in the printed journal (one column or two columns) because the same source file will be used for preparing the electronic and print products. For this reason, it is essential that figures be designed to that when reduced they will be as close as possible to the size they will appear in the print products. It would be very helpful if you send original hard copy of all figures and text when you send final electronic files so that Production can confirm accuracy and completeness of the files. All charts and graphs should be professionally prepared rendered or developed in an electronic art package such as Photoshop or Illustrator. Original, hard copy figures (charts, graphs, photographs, and color) should be submitted with your accepted manuscript. One copy of each piece of art should also be included. Original art should be flat, unfolded, and not attached with tape, staples, or paperclips. Recommended Lettering: 8 or 9 points (pt); Sans Serif type fonts, such as Helvetica or Arial, are the most legible fonts.

Please use these links for specific preparation instructions of Hardcopy art or digital art.

5.5. Information for Contributors

AGU publishes the following journals: Journal of Geophysical Research, Water Resources Research, Radio Science, Paleoceanography, Global Biogeochemical Cycles, and Tectonics. Manuscripts submitted for publication should convey the author's findings precisely and immediately to the reader. Authors are urged to have their manuscripts reviewed critically by colleagues for scientific accuracy and clarity of presentation. If a manuscript has more than one author, co-authors must consent to the final version of the manuscript. For submission instructions, see specific journal.

5.5.1. Manuscript preparation

All parts of the manuscript must be in 12-point type and double or, preferably, triple spaced on good quality white paper 8» x 11 inches (21.5 x 28 cm) with at least 1-inch (2.5 cm) margins at top, bottom, and sides. Erasable bond, which smudges easily, and tissue paper are not acceptable. Each page of the manuscript should be numbered in the top right hand corner. Provide four copies.

Authors are expected to supply neat, clean copy and to use correct spelling, punctuation, grammar, and syntax. Spelling and hyphenation of compound words follow the unabridged Webster's Third New International Dictionary. The metric system must be used throughout; use of appropriate SI units is encouraged. Following recommended style and usage expedites processing and reduces the chance of error in the typesetting.

The manuscript should be arranged as follows:

5.5.2. Abstract

The abstract should be a single paragraph (150 words or fewer) stating the nature of the investigation and summarizing its important conclusions. The abstract should be suitable for separate publication and be adequate for indexing. When a paper is accepted for publication, the author will be asked to submit electronically an abstract and index terms for the monthly Geophysical Abstracts in Press (GAP), which is published approximately 1-3 months prior to print publication of the article. This abstract does not replace the abstract (described above) that is published with the article. Electronic submission of abstracts ensures accuracy and streamlines production of the GAP, the Earth and Space Index (EASI), and the annual print indexes. AGU asks authors to carefully select index terms when they submit their GAP abstracts to ensure that a paper is classified properly in GAP and in the annual year-end subject index for each journal and to allow readers to locate papers with greater ease and precision. This new system is part of AGU's strategy to move toward electronic distribution of information.

5.5.3. Mathematics

The lowercase letter «l» and the numeral 1 and the capital letter «O» and the numeral 0 should be distinguished. Any hand-drawn symbols must be identified. Add one extra line space above and below all displayed equations. Alignment of symbols must be unambiguous. Superscripts and subscripts should clearly be in superior or inferior position. Fraction bars should extend under the entire numerator.

Barred and accented characters that are available for typesetting may be used. Symbols that are not available and therefore must be avoided are triple dots, accents (other than bars) that extend over more than one character, and double accents (e.g., a circumflex over a bar). Accents over characters can be eliminated by the use of such symbols as ‘, *, and † set as superscripts.

If an accent or underscore has been used to designate a special typeface (e.g., boldface for vectors, script for transforms, sans serif for tensors), the type should be specified by a note in the margin.

If the argument of an exponential is complicated or lengthy, “exp” rather than e should be used. Awkward fractional composition can be avoided by the proper introduction of negative powers. In text, solidus fractions (l/r) should be used, and enough enclosures should be included to avoid ambiguity. According to the accepted convention, parentheses, brackets, and braces are in the order { [( )] }. Numbered displayed equations should appear consecutively; the number (in parentheses) should be to the right of the equation.

5.5.4. Notation

A list of parameters used in the text and their definitions should be set up as shown in the following sample:

- c rate of soil accumulation, m/yr.
- d median grain size of water-deposited material, µm.
- D distance of the locus of points, m.
- h elevation of the rock stream channel at a particular time ti, m.

5.5.5. Acknowledgments

Acknowledgments should be limited to collegial and financial assistance. Acknowledgments are not meant to recognize personal or manuscript production support.

5.5.6. References

Complete and accurate references are of major importance. Omissions, discrepancies in the spelling of names, errors in titles, and incorrect dates must be avoided.

- Citations: All works cited in the text must be included in the reference list. References are cited by the last name of the author and the year: [Jones, 1990]. If the author’s name is part of the sentence, only the year is bracketed: Jones [1990]. Personal communications and unpublished data or reports are not included in the reference list; they are cited parenthetically in text: (F. S. Jones, unpublished data, 1990). Two or more publications by the same author in the same year are distinguished by a, b, c after the year: [McElroy et al., 1982a, b].
- Reference list: Reference lists should be limited to text citations. The references are arranged alphabetically by the last names of authors. Multiple entries for a single author are arranged chronologically. For laboratory, company, or government reports, information should be included on where the report can be obtained. For Ph.D. and M.S. theses the institution granting the degree and its location should be given. References to papers delivered at meetings should include title of paper, full name of meeting, sponsor, meeting site, and date.
- Samples

Report	Beal, R. C., The Seasat SAR wind and ocean wave monitoring capabilities, Rep. JHU/APL SIR79U-019, 56 pp., Appl. Phys. Lab., Johns Hopkins Univ., Laurel, Md., 1980.
Abstract	Hartle, R. E., and J. M. Grebowsky, Upward ion flow in the nightside ionosphere of Venus (abstract), Eos Trans. AGU, 71, 1431, 1990.

	ionosphere of Venus (abstract), Eos Trans. AGU, 71, 1431, 1990.
Book	Macdonald, G. A., A. T. Abbot, and F. L. Peterson (Eds.), Volcanoes in the Sea: The Geology of Hawaii, 2nd ed., 517 pp., Univ. of Hawaii Press, Honolulu, 1983.
Journal article	McElroy, M. B., M. J. Prather, and J. M. Rodriguez, Loss of oxygen from Venus, Geophys. Res. Lett., 9, 649-651, 1982a.
	McElroy, M. B., D. L. Adams, and M. J. Prather, Escape of hydrogen from Venus, Science, 215, 1614-1615, 1982b. [a and b added to distinguish text citations]
Thesis	Passey, Q. R., Viscosity structure of the lithospheres of Ganymede, Callisto, and Enceladus, and of the Earth's mantle, Ph.D. thesis, Calif. Inst. of Technol., Pasadena, 1982.
Paper presented at meeting	Skalsky, A., R. Gerard, S. Klimov, C. Nairn, J. G. Trotignon, and K. Schwin- genschuh, Martian bow shock: Topological features of the upstream region, paper presented at Chapman Conference on Venus and Mars, AGU, Balatonfured, Hungary, June 3-8, 1990.
Article in book	Squyres, S. W., and S. K. Croft, The tectonics of icy satellites, in Satellites, edited by J. Burns and M. S. Matthews, pp. 193-341, Univ. of Ariz. Press, Tucson, 1986.

5.5.7. Tables

Every table must have a title, and all columns must have headings. Column headings must be arranged so that their relation to the data is clear. Footnotes should be indicated by reference marks (*, †, ‡: §) or by lowercase letters typed as superiors. Each table must be cited in text.

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Each figure must be cited in numerical order in the text. One set of original figures suitable for reproduction and three clear photocopies must accompany the manuscript. Orientation must be clearly marked on figures. Each figure must also have a caption which should be included both on the page with each figure and in a separate list of captions. Latitude and longitude must be indicated on maps. Figures should be computer-generated or otherwise mechanically produced; hand-drawn characters are not acceptable. Authors should design their figures to allow for suitable reduction; this includes making sure that lettering is of sufficient size. Do not include in the figure any information that could easily be worded in the caption. Though shading is acceptable (85 DPI or coarser reproduces best), when possible, use varying patterns instead of varying shades of gray. For more detailed information, contact the Author Information number at 202-777-7354 and request a copy of General Guidelines for Artwork. Figures whose characters are too small or whose tick marks or dot patterns are too faint or which are otherwise unacceptable for reproduction will be returned to the author for redrafting. Color figures, foldouts, pocket maps, etc., can be accommodated, but the costs for publishing these special features must be borne by the author. Unless requested in writing by the author at the time of initial manuscript submission, figures will not be returned. AGU cannot guarantee the return of original figures.

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Physics of Fluids

6. Guidelines to Publications of AIP

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6.2. How to Prepare Your Manuscript

For general format and style, consult recent issues of the Journal and the 1990 Fourth Edition of the AIP Style Manual, published by the American Institute of Physics and available free-of-charge for downloading in Adobe's Portable Document Format (PDF). Information regarding Letters appears in the heading of that section. Except for length, manuscripts are governed by the same criteria as for longer articles. However, there is a three-month time limit, from date of receipt to acceptance, for processing Letters manuscripts. Timeliness and current importance of the subject matter, and brevity and clarity of presentation determine the acceptability of contributions. Feasibility studies and proposals for future research will seldom be accepted.

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Brief Communications are limited to four printed pages, and follow the refereeing and publication schedule of regular articles. Brief Communications do not have section headings. The Manuscript, including the abstract, references, and captions, should be neatly typed in English, double-spaced, on one side only of 21.6 x 28 cm (8-1/2 x 11 in. or A4) white paper with ample margins. It should be carefully proofread by the author. The manuscript must be in good scientific American English; this is the authors' responsibility. Unclear or excessive handwritten insertions are not acceptable. Number all pages in single sequence beginning with the title and abstract page. The title page should contain the title of the article, the names of the authors, a suitable by-line, and a short abstract only. Pages of the manuscript should be arranged in the following order: abstract, text, acknowledgment, appendices, references, tables, and figure captions. Papers should not be lengthened by unnecessary descriptions and repetitions, but neither should authors use a telegraphic style detrimental to the clarity and understanding of the paper. The use of abbreviations in the text other than those listed in the AIP Style Manual should be avoided. Authors should submit three clear copies of the manuscript, including original (high-quality) illustrations, and, if necessary for the reviewer's use, a second set of high-quality illustrations. The Title should be concise as possible but sufficiently informative to describe the subject under discussion. The Abstract of the paper must emphasize the new results and be short and self-contained so that it can be used by the abstracting journals without further change. One should not have to read the paper to understand the abstract. It should be written as one paragraph. Authors' names should preferably be written in a standard form for all publications to facilitate indexing and avoid ambiguities.

Equations should be neatly typed, punctuated and aligned to bring out their structure, and numbered on the right. Mathematical operation signs indicating continuity of the expression should be placed at the left of the second and succeeding lines. Use × rather than a centered dot, except for scalar products of vectors. The solidus (/) should be used instead of built-up fractions in running text, and in display wherever clarity would not be jeopardized. Use «exp» for complicated exponents. Notation must be legible, clear, compact, and consistent with standard usage. All unusual or handwritten symbols whose identity may not be obvious must be identified in the margin the first time they appear, and at all subsequent times when confusion might arise. Superscripts are normally set directly over subscripts; authors should note where readability or the meaning requires a special order. If there is any possibility of confusion, indicate superscripts by a black penciled ÿ underneath the superscript and subscripts by a black penciled ÿ over the subscript. References and footnotes should be in the form indicated in the AIP Style Manual. There should be no reference to classified publications even if their titles are unclassified. In every case, where a reference to a published (or "submitted to") paper can be used, "unpublished" references must be omitted. In all other cases, references to "unpublished" references must be omitted. In all other cases, references to "unpublished" papers should be avoided; however, reference to a thesis is appropriate. The names, including initials, of all authors in each reference should be given (in the text the use of et al. is permissible). For footnotes to title and by-lines use a), b), c), etc. All text references (excluding tables and captions) should be listed in sequential order of appearance. Avoid lengthy footnotes by inserting them in the text, except for the references. A list of references and footnotes should be typed double-spaced, separately from the text. Titles of papers in journals are required. A list of abbreviations for journals appears in the AIP Style Manual.

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2. Number all pages in sequence, starting with the title page.
3. Type title and abstract on a separate first page.
4. Type (double-spaced) list of references (including footnotes), list of figure captions, and tables on pages separate from each other and from the main text.
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6. Provide marginal notes to clarify symbols and expressions for the compositor.
7. Submit (a) three clear copies of the manuscript with clear copies of figures and (b) the original high-quality figures.
8. The original figures must be identified by figure number and author's name.
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10. Include correspondence concerning the paper's previous history.

PHYSICAL REVIEW E

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Notation should be clear, compact, and consistent with standard usage. Equations should be neatly formatted, punctuated and aligned to bring out their structure, and numbered on the right. (a) Diacritical marks (tildes, etc.) can be put over any symbol, including indices. (b) Three-vectors are generally set in roman boldface type. More general vectors, matrices, etc., are usually set in lightface italic type, although boldface may alternatively be used. (c) Be careful when using the solidus (/) in fractions. For example, 1/2a means 1/(2a), not (1/2)a. Use appropriate bracketing if needed to ensure clarity. References and footnotes to text material must be combined in a single list, numbered consecutively in their order of first appearance in the paper, and placed in a double-spaced list at the end of the text material. They should be designated and cited in text by on-line Arabic numerals in square brackets. As an option, footnotes may appear separately from references and be placed at the bottom of the page on which they are cited. They should be designated by superscript numbers and numbered consecutively throughout the paper.

Footnotes within tables should be designated by lower-case letter superscripts and given at the end of the table. For the proper form for references, see the Physical Review Style and Notation Guide and recent issues of this journal. The names of all authors of works cited should be given in the references, unless the number of authors is greater than three; in this case, the first author's name followed by et al. is allowed. When reference is made to internal reports or other items not available in the open literature, it is the responsibility of the author to provide sufficient information to enable the reader to obtain a copy of the referenced material. References to classified reports or other documents with restricted circulation should be avoided. It is important to confirm the accuracy of bibliographic information in references. This has become more important now that the journal is online. Hyperlinks will be programmed to enable readers to ``click'' on references and jump directly to the material cited. If your reference citations are incorrect or incomplete (e.g., missing author name, or an incorrect volume number or page), the associated hyperlinks may fail, and the usefulness of your paper in the online environment may be diminished. Since at the present time such links work only from the reference section, work cited anywhere in the paper, including in figure and table captions and in ``Note(s) added,'' should be included in the reference section.

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Separate tables (numbered in the order of their first appearance) should be used for all but the simplest tabular material; they must have captions, which should make the tables intelligible without reference to the text. The structure should be clear, with simple column headings giving all units. The decision on whether results should be published in long tables depends on the precision of the data, i.e., whether they can be read accurately enough from a figure, and on how many readers are likely to use the numbers relative to the space needed in the journal.

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Journal of Rheology

8. Guidelines to Journal of Rheology

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Journal of Fluid Mechanics

9. Guidelines to Journal of Fluid Mechanics

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