Scientific English

M2 Marine Physics

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Lecture

Introduction

- Brief history of Science and scientific writing

Scientific writing

- Structure and content of a paper
- Writing and revision papers
- Writing reports, proposal, etc ...

Effective Scientific writing

- How to write more effectively

The peer-review process

- What? And How?

Activities

- Read and discuss scientific articles
- Write a short article
  Due date: **Dec. 5th**
- Review articles
  Due date: **Dec. 12th**

Material available at: http://ocean.fsu.edu/~qjamet/share/Scientific_English/

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Tentative paper instructions

Text requirements for your paper:

- 6 publication units (1 PU = 500 words or 1 figure or table)
- Using a standard structure:
  - Abstract
  - Introduction
  - Methods
  - Results
  - Conclusion

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How to write more effectively

I. Subjects and Actions

II. Cohesion, Coherence and Emphasis

III. Concision and Simplicity

IV. A few grammar tips

V. Writing and self-revising (summary)

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II. Cohesion, Coherence, and Emphasis

3 Main principles:

- Put new information last (#1)
- Use passive voice judiciously (#2)
- Make sure the first and last sentences of a paragraph match (#3)
- Do not abuse transition words (#4)

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II. Cohesion, Coherence, and Emphasis

Principle 1: Put new information last

- **New** (=unfamiliar) information:
  - Ideas or characters that **have not yet appeared** in your manuscript
-

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  - Background knowledge

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Most readers will find your writing more clear if you consistently begin sentences with familiar (old) information and conclude sentences with unfamiliar (new) information.

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II. Cohesion, Coherence, and Emphasis

Principle 1: Put new information last

What happens when you begin a sentence with new Information?

- Your reader gets a new idea without any context.
- He/she may try (incorrectly) to link this information to the previous sentence.
- After reading the rest of the sentence, the reader have to revise his understanding.
- It makes your writing confusing because it lacks cohesion.

Beginning sentences with old information makes writing cohesive.

It also allows you to **put new, important information**
in the position of **emphasis at the end of the sentence.**

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Principle 1: Put new information last

Example:

✖ Farmers try to provide optimal growing conditions for crops by using soil additives to adjust soil pH. Garden lime, or agricultural limestone, is made from pulverized chalk, and can be used to raise the pH of the soil. Clay soil, which is naturally acidic, often requires addition of agricultural lime.

→ Find old and new informations

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Example:

> Farmers try to provide optimal growing conditions for crops by using soil additives to adjust soil pH. Garden lime, or agricultural limestone, is made from pulverized chalk, and can be used to raise the pH of the soil. Clay soil, which is naturally acidic, often requires addition of agricultural lime.

Now each sentence leans forward to new information at the end,
instead of tying backward at the end.
This makes the sentences easier to read,
because the reader doesn't need to jump around in thought process.

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II. Cohesion, Coherence, and Emphasis

Principle 1: Put new information last

When your sentences "glue", your writing is said to be cohesive.

If your sentences are regularly beginning with unfamiliar concepts, your writing won't be very cohesive.

Putting the **new, important information at the end** will help inform the readers of what you intend to emphasize.

Revision Technique:

Read through your manuscript carefully. In each sentence, underline any pieces of new information (unfamiliar to the reader at this point in the manuscript). Make sure your sentences begin with an appropriate backwards link, and not with an unfamiliar concept.

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II. Cohesion, Coherence, and Emphasis

Principle 2: Use passive voice judiciously

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Sentences are in **passive voice**
when the **subject is the object of the action**.

The dog chased the ball.	Active
The ball was chased by the dog. The ball was chased.	Passive

<u>Consequences</u>:

- The order of the subject and verb are switched.
- The order of the action can be omitted.

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II. Cohesion, Coherence, and Emphasis

Principle 2: Use passive voice judiciously

Passive voice isn't inherently bad. It can actually be quite useful.
The problem is that some writers incorrectly think passive voice is inherently scientific and rely on passive voice excessively.

Journal recommendations:

- Nature journals like authors to write in the active voice… -Nature
- Choose the active voice more often than you choose the passive… -Science

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II. Cohesion, Coherence, and Emphasis

Principle 2: Use passive voice judiciously

1) Passive voice brings ambiguous characters :

- A consequence of passive voice is that the actor can be omitted. Sometimes this makes sense (e.g. focus the reader on the method), other times is causes confusion.
- It is not OK to omit the actor if there are multiple possibilities, leaving your reader to guess.
- Example:

  The DNA was sequenced using the n-terminus method (Smith et al. 2004).

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Principle 2: Use passive voice judiciously

2) Active voice emphasize author responsibility:

Passive	No attempt was made to contact non-responders because they were deemed unimportant to the analysis
Active	We did not attempt to contact non-responders because we deemed them unimportant to the analysis

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II. Cohesion, Coherence, and Emphasis

Principle 2: Use passive voice judiciously

3) Active voice is more direct, easier to read:

Passive	Additionally, **it was found that** pre-treatment with antibiotics increased the number of super-shedders, while immunosuppression did not.
Active	Pre-treating the mice with antibiotics increased the number of super-shedders while immunosuppression did not

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4) Wordiness:

Passive voice tends to **increase length**, while **active** voice can help keep writing **concise**.

Shorter writing is better! It takes less time to read and it uses less space.

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5) Dangling modifiers:

A dangling modifier is a modifying phrase whose implicit subject does not match the explicit subject of the clause it modifies.

To dissect its brain, the affected fly was mounted on a . . .

After **aging** for 72 hours at 50°C, a shift was observed . . .

To dissect its brain, **we** mounted the affected fly on a . . .

After aging for 72 hours at 50°C, **the samples** exhibited a shift in . . .

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Principle 2: Use passive voice judiciously

Advantage of passive voice
The key use of passive voice is that it switches the order of a sentence.
Use passive voice when it moves the old information to the front and new information to the back.

Use the passive as needed to keep the flow,
and always provide the actors if there is a possibility of confusion.

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Principle 2: Use passive voice judiciously

How to recognize passive voice?

- Active voice: the subject is doing the action of the verb.
- Passive voice: the subject is receiving the action of the verb or being acted upon
  (the verb is accompanied by a helping (auxiliary) verb,
  i.e. *is, are, was, were, has, have, been*.)
- **Tip:** I you can rearrange a sentence to have someone or something directly perform the action → *passive voice*
- How about Berglund et al. (2022)?

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II. Cohesion, Coherence, and Emphasis

Principle 3: Make sure the first and last sentences of the paragraph match

This principle is called **coherence**.
When writing is coherent, it stays on topic in expected units.

Readers usually expect **thoughts** to be expressed in **paragraph units.**

ONE PARAGRAPH == ONE IDEA !!

Each sentence in the paragraph should support that main point.

So paragraphs should be **short** and **focused**.

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II. Cohesion, Coherence, and Emphasis

Principle 3: Make sure the first and last sentences of the paragraph match

Example with great **cohesion** (one sentence leads to another)
but **no coherence**:

My favorite animal is the domestic cat. Cats were domesticated almost 10,000 years ago in ancient Mesopotamia. Mesopotamia is a name that literally means "the land between two rivers," taken from Greek. The Greek language is one of the oldest written languages, and its alphabet forms the basis of many other writing systems, including Latin. Latin ...

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II. Cohesion, Coherence, and Emphasis

Principle 3: Make sure the first and last sentences of the paragraph match

Revision Technique:

Test for coherence: Read the first and last parts of each paragraph. Do the topics match?

To be more thorough, make sure each sentence in a paragraph supports the main point of that paragraph.

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II. Cohesion, Coherence, and Emphasis

Principle 4: Do not abuse transition words

If your writing follows a logical flow, you don’t need to start each sentence by a transition word (Therefore, Thus, Furthermore, However, etc.)

You can be more direct in English than in French

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II. Cohesion, Coherence, and Emphasis

Examples:

✖ Improvements are expected by our method in the predictive power of all the scores being computed on multispecies alignments.

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II. Cohesion, Coherence, and Emphasis

Examples:

✗ Improvements are expected by our method in the predictive power of all the scores being computed on multispecies alignments.

✓ Our method will improve the predictive power of all multispecies alignment scores.

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II. Cohesion, Coherence, and Emphasis

Examples:

✗ A survey is given of differential expression analyses using the linear modeling features of the package.

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II. Cohesion, Coherence, and Emphasis

Examples:

✗ A survey is given of differential expression analyses using the linear modeling features of the package.

✓ We use the linear modeling features of the package to survey differential expression analyses.

✓ We survey differential expression analyses that use the linear modeling features of the package.

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II. Cohesion, Coherence, and Emphasis

Examples:

✖ Using sarkosyl to induce nuclear run-on, the transcriptionally inactive b-globin gene in mature erythrocytes was demonstrated to harbor high levels of Pol II at 5' proximal regulatory regions (Smith et al.)

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II. Cohesion, Coherence, and Emphasis

Examples:

✗	Using sarkosyl to induce nuclear run-on, the transcriptionally inactive b-globin gene in mature erythrocytes was demonstrated to harbor high levels of Pol II at 5' proximal regulatory regions (Smith et al.)
✓	Using sarkosyl to induce nuclear run-on, Smith et al. showed that the transcriptionally inactive b-globin gene in mature erythrocytes harbors high levels of Pol II at 5' proximal regulatory regions.

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II. Cohesion, Coherence, and Emphasis

Examples:

✖ We identified genes that are differentially expressed between species. A phylogenetic tree based on the number of differentially expressed genes between species recapitulates their known phylogeny.

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Examples:

✗	We identified genes that are differentially expressed between species. A phylogenetic tree based on the number of differentially expressed genes between species recapitulates their known phylogeny.
✓	We identified genes that are differentially expressed between species. The number of differentially expressed genes can be used to build a phylogenetic tree that recapitulates the known phylogeny.

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II. Cohesion, Coherence, and Emphasis

Examples:

✘ By applying a high resolution, 90 degree bending magnet downstream of the laser electron interaction region, the spectrum of the electron beams **could be observed**.

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Examples:

✗ By applying a high resolution, 90 degree bending magnet downstream of the laser electron interaction region, the spectrum of the electron beams **could be observed**.

✓ We could observe the spectrum of the electron beams by applying a high resolution, 90 degree bending magnet downstream of the laser electron interaction region

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II. Cohesion, Coherence, and Emphasis

Examples:

✖ The activation of calcium channels is induced by the depletion of endoplasmic reticulum calcium stores

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Examples:

✗ The activation of calcium channels is induced by the depletion of endoplasmic reticulum calcium stores

✓ Depleting calcium from endoplasmic reticulum activates calcium channels.