

Prefer simple words

Word Complexity

Instead of

Consider

elucidate

show

putative

(nothing)

methodology

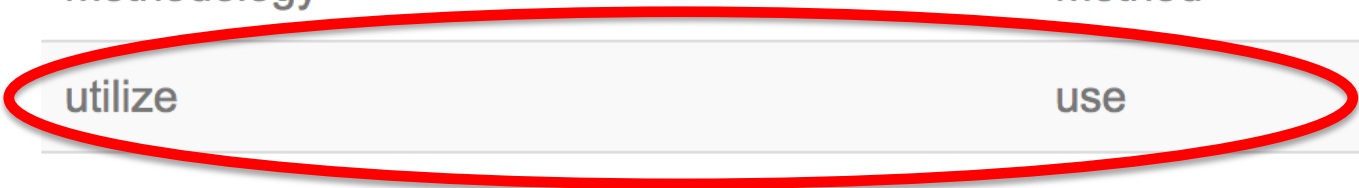
method

utilize

use

etiology

cause



Prefer simple subjects



The sequences that had passed our filtering, trimming, and alignment with ClustalX, were scanned for conserved elements across mammals.



The sequences were trimmed, filtered, and aligned with ClustalX. The resulting alignments were scanned for conserved elements across mammals.

“important”

- Don't tell the reader that something is important.
- Describe to the reader why that thing is important.

Excessive hedging

- “Our results suggest that our method may possibly identify highly obscured quasars”
 - “suggest”, “may”, “possibly”
 - Some hedging is good, but “may” or “suggest” is sufficient.

Demeaning adverbs

- “obviously”, “clearly”, “undoubtedly”
 - These words are not helpful
 - Things that are clear to you may not be clear to the reader
- Be specific in pointing to results
 - “Figure 5 clearly shows that...” is a red flag.
 - Show me, don’t tell me

Oxford comma

- a, b, and c

I love cooking my pets and my family.

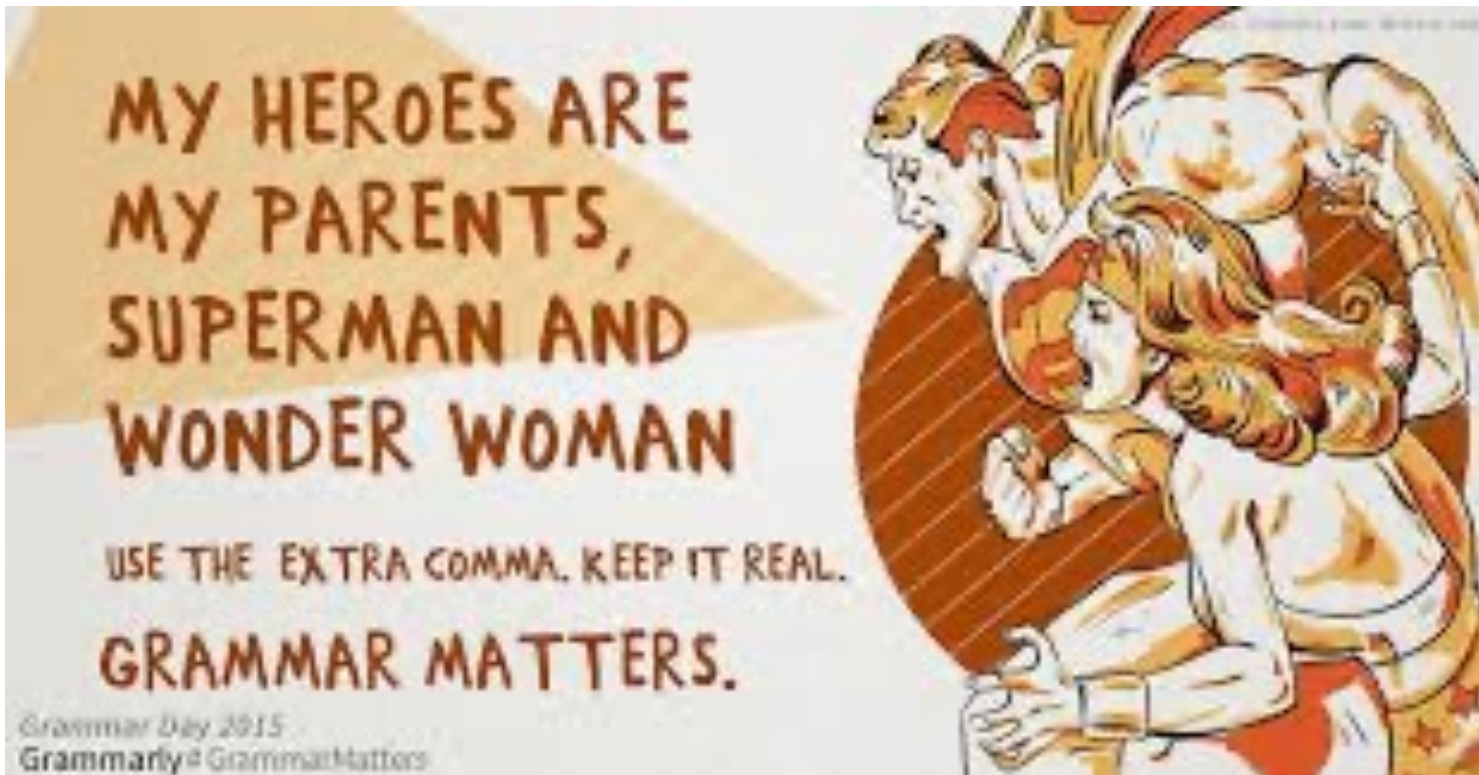


Don't be a serial killer.

**Use serial commas and love cooking,
your pets, and your family.**

Oxford comma

- a, b, and c



When to use “the”

- https://owl.purdue.edu/owl/general_writing/grammar/using_articles.html
- “The galaxy”: a very specific galaxy
- “A galaxy” or “Galaxies”: general term
- [still, often not obvious]
- Uncountable and unspecific: do not use A/The
 - “The data provided information needed to identify”
 - “The data provided the information we needed to identify...”

Also: <https://ui.adsabs.harvard.edu/abs/2022NatAs...6.1021K/abstract>

Prepositions

- At, on, in, etc...

Few/a few: opposites!

- “Few students attended class”: negative
- “A few students attended class”: positive

(sometimes I hate English)

Only

- “only” should be before and as close as possible to the word that it modifies

Only Xinyi completed the homework

Xinyi only completed the homework

Xinyu completed the only homework

Besides...

- “Besides,” does not work!
 - Needs to be followed after a noun
- “Besides the one data point”

Language changes: “they”

He/she for singular, they for plural

Gender-inclusive: using “they” for singular
preferred pronoun for some people

Past/present tense in introductions?

- Let's see what papers on astro-ph did today!

Common mistakes

- Common Mistakes in Writing Astronomy and Physics Literature in English
 - <https://arxiv.org/abs/1011.5973>
 - Mostly in Chinese

Priorities for sentence construction

- 1) Complete sentence
- 2) Not a run-on sentence
- 3) Sentence and language is simple
- 4) explaining why something is important
 - Important that the logic is there, even if the idea needs to be split into two sentences
 - Show, don't tell (but ok to split if needed)
- 5) subject close to the verb

Plagiarism

- Avoid plagiarism!
- https://owl.purdue.edu/owl/avoiding_plagiarism/index.html
- A scientist's most prized possession is their integrity. Our careers are built off of our reputations, which depend on our integrity. If we commit plagiarism or other severe ethical problem (fraud), our careers are finished
 - We must always be true to the data

Don't even come close to plagiarism

- One example: ALMA PI program “The Shape of Water,” analysis of that data submitted by a different group as “The Way of Water”
- Many plots were *very* similar to plots from previous papers, without sufficient attribution

Example at: https://twitter.com/chentao_yang/status/1648566004258160643

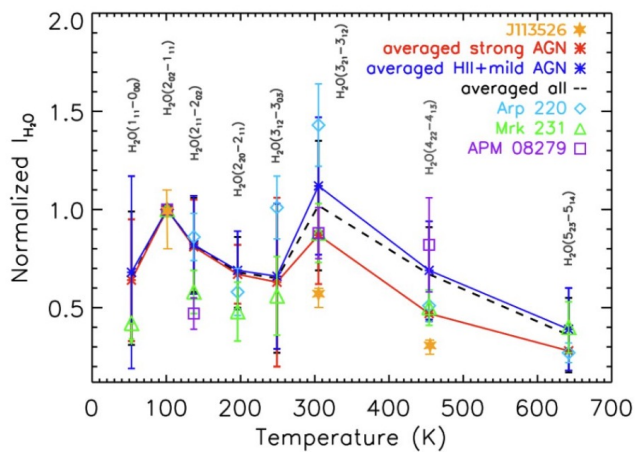


Figure 11. Integrated fluxes of the three J1135 de-

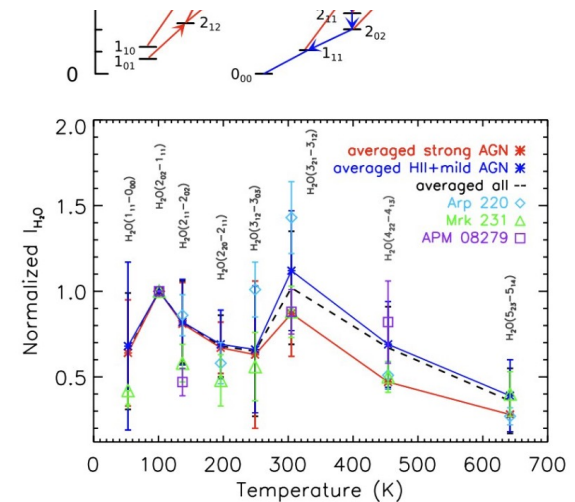


Figure 3. Upper panel shows the H₂O energy level diagram. Among the red lines that indicate the main possible IP numbers rather, the solid lines show

Repeat: Figures and Tables: Guidelines

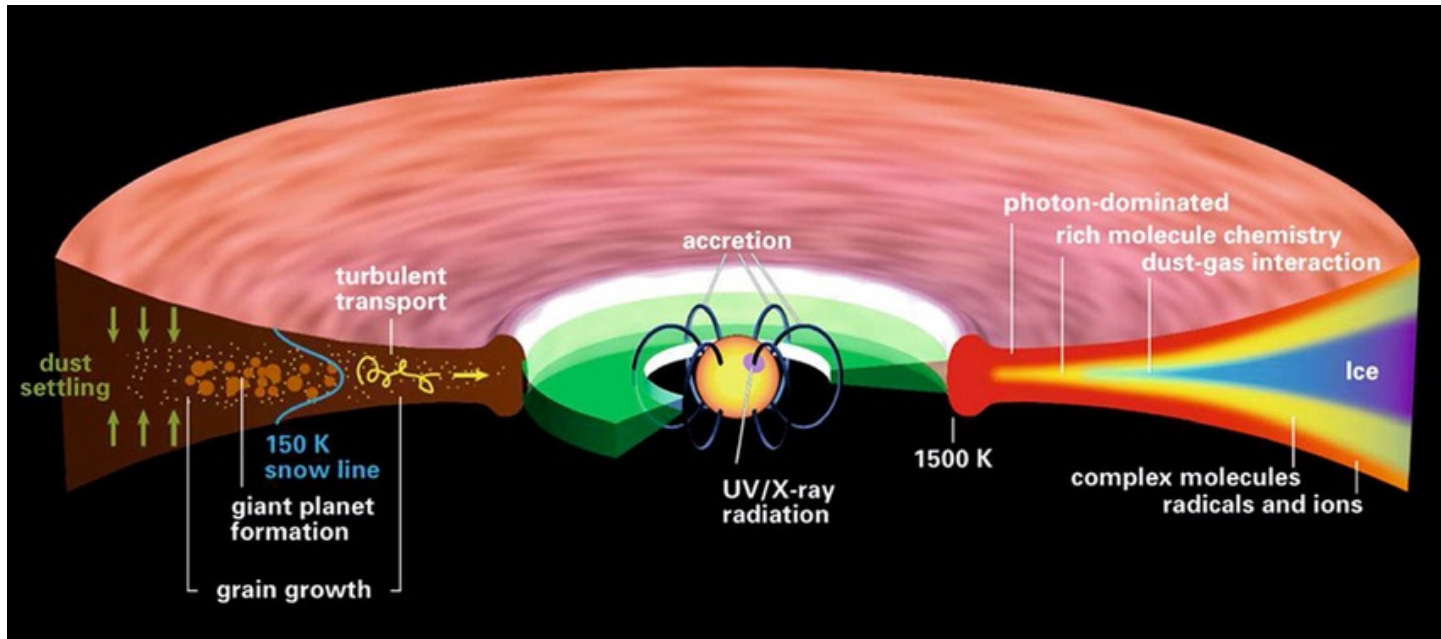
- Tables
 - keep table structure simple: **how will people use your table?**
 - place familiar content on left and new important information towards right
 - design table title to identify specific topic
 - label dependent variables in column headings and independent variables in row headings
 - Units! Footnotes!
- Figures
 - place independent variable on abscissa (x-axis) and dependent variable on ordinate (y-axis)
 - ensure figure points, lines, axes, scales are easy to interpret
 - legend/caption should be descriptive of content
 - Parallel outline (one in text form, one in Figure form)
 - Units! Good caption!

Visuals: **Show, don't tell!**

- helps reader interpret, remember complex information in simplified form
- can show:
 - how analysis looks or works
 - how analysis or data are organized or actions are performed
 - how elements or data are related
- visuals should be audience-centered
 - keep as simple as possible
 - include explanatory labels, title, caption
 - use visuals to enhance your story
 - Should stand on own: can I see story without reading anything?
- should use fewest number of plots that tell the story

Visuals

- Most readers look at visual first
 - Some exceptions: look at visuals only if logic is surprising
- Visuals need to tell the story
 - Story is told in text and in visuals
- Not just plots, also illustrations
- Spend time on the plots! Make them **clean** and **easy to understand**!



Henning & Semenov 2013

Visuals for color-blind

- I avoid green/red close to each other
 - most common form of color blindness
- <https://pilestone.com/pages/color-blindness-simulator-1>
- <https://journals.aas.org/graphics-guide/>

Figures and Tables

2. Choose an article from astro-ph this week in your field. The article should be in a main journal (not Nature/Science or Letters) and should have at least 8 Figures and Tables. Read the Figures and Tables first. List the paper that you chose.

- a. What story do the Figures tell?
- b. Now read the paper. How do the Figures help the story along? How does the text help the story?
- c. Are the Figures convincing? Is there anything not clear?
- d. Are the Figures pretty? How would you make them look better?
- e. Do the Figure captions tell you everything about the Figure? What don't you understand?
- f. What information do the Tables convey to the readers?
- g. Are there large data Tables intended to be used by readers? If so, read it in. Do you have problems using the Table?
- h. Is there information that should be in Table format? This could either be data, or some way to simplify the story in the text.
- i. Are there any cartoons? Should there be a cartoon?