Weather Observation & Analysis Project

Report Requirements & Writing Tips

See Wx Proj Handbook, pages 9 -13

What Makes a Bad Report?

- Unclear thoughts & expression
- Doesn't meet objectives
- Findings are not supported
- Irrelevant /off-topic material
- Badly organized

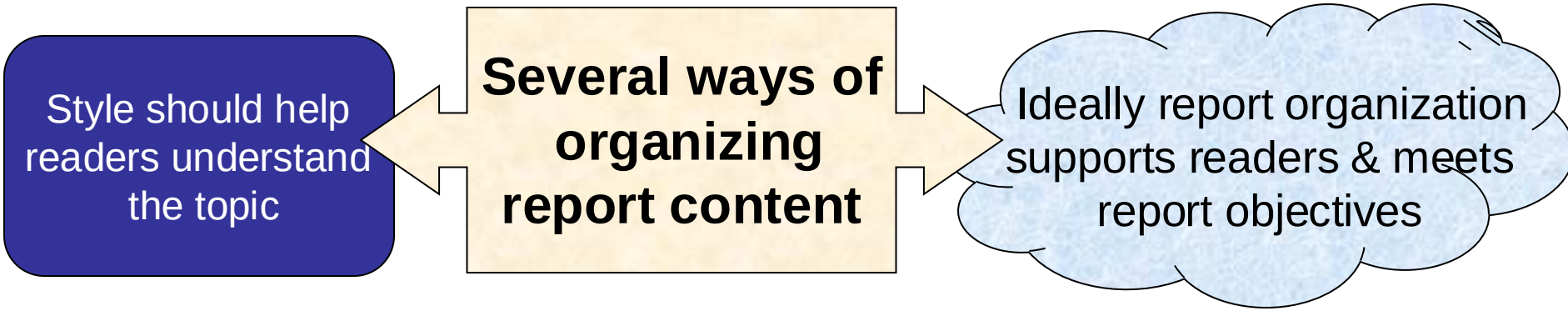
What Makes a Bad Report? (continued)

- Too long / too short
- Unprofessional writing, too much jargon
- Poor grammar & spelling
- Figures & captions are unclear
- Incorrect / inadequate referencing

What Makes a Good Report?

- Message is clear & concise
- Meets report objectives & information is relevant
- Findings are well supported by data & explanations
- Report logically leads the reader though content
- Length is appropriate
- Writing is professional, precise, organized & easily understood
- Figures, graphs & Tables enhance & explain points
- Referencing is sufficient & correct

Structuring a Report



Considered, organized thoughts help you write clearly & succinctly

- Outline your content with clear points relating to your objectives.
- Organize content logically; tell the weather story
- Create & sequence headings /sub-headings; they are signposts for your content

http://www.surrey.ac.uk/Skills/pack/structure.html

Our Report:

A Case Study -- *No hypothesis to test!*

What are the report elements?

See WxProj Handbook pp. 9-13

Recognise: As a case study, the report body integrate**s** Results & Discussion information

*so these heading **do not** work for case studies*

Organise headings /subheadings so they show the case study → tell your weather story

WxProj report: **A case study of the weather & its cause(s) during our 4-day period**

WHAT happened? [when?] Why?

Organize by: weather event(s)? day by day? day verses night? specific similar time periods?…

What makes the most sense? What are the major sections?

- *use working headings /subheadings…….*
- *list key points…..with evidence from …source(s)*
- *then write from your points…..*

Make a realistic time-plan

Writing always takes longer than expected…

Allow time for analysis

Know what to write before you start! Determine your case (weather story + evidence).

- understand the **local weather** from local data (two graphs & diary)
- understand the **synoptic controls** on our 4-days of weather; identify & follow storm(s) patterns on synoptic images.
  - organize the synoptic data (satellite images & surface maps) by time.
  - view them in time sequence (view all satellite images in order by time; view all surface maps by time);
  - pair a satellite image & a surface map for the same time, then view the paired images in order by time
  - Seeing all the images at once can be really useful

- **consider patterns** – look for weather data linkages & relationships. Visually integrate specific local & synoptic information by time; your interpretation(s) tell your weather story.
- **identify and use specific supporting evidence for your interpretations.** Support your analysis with evidence from your local &/or synoptic data; use multiple evidence sources when possible.
- **state how the evidence you identify supports your ideas.** For our observation period support what weather happened & why. Make your best case!

Write & make time for Editing!

Get your thoughts on paper, **but then revise & edit**

Plan multiple edits, each with a specific /different purpose!

Key edit types & stages.

1) **Revise for content, meaning & structure**; Get your information right. Put it in a logical order. Communicate it well. Check for clarity of thought & expression. **Needs multiple edits.**

2) **Edit** for grammar, punctuation, word choice, proper citations /referencing & other stylistic aspects of the report **at the very end.**

Wx Proj Report Contents:

Table of Contents

Lists report sections & page numbers
(Don't forget to number your pages)

Use report headings & subheadings

Outline when you start

Finalize last

Report Contents continued:

Introduction

States report objectives

Gives a context for your report

What should be included?

Often best to write it last

Methods - How the project was done

- section is minimal BUT has enough to show the reader what was done.
- overview methods; always refer to original /published sources for method details whenever possible (only detail methods when they are not available elsewhere)

WxProj document sets out our method. *Consider it a published document. Provide an overview of the project then cite and reference this document so readers can find the details. Indicate specific page numbers in your citations when sources are longer than 30 pages.*

Report Body ← *Not an experiment*

No ~~Results /Discussion~~ sections!

- create your own descriptive headings & subheadings to guide the reader
- case studies are an analysis & explanation of events & their cause(s) based on evidence
  - start with main events & their explanation
  - look for patterns, look at larger, then finer time & spatial scales
  - support your statements with evidence; use multiple sources of evidence whenever possible

How much detail? What evidence? How to decide?

Figures (graphs, maps, images, tables, etc.)

Summarize & efficiently communicate

- 1 good figure = 1 kiloword!
- provides evidence
- must be mentioned in the report body
- located close to where they are first discussed; ideally, readers should view a figure when reading about it
- are numbered in order of their appearance in the report (Figure 1 is the first figure discussed in the text...)
- have captions

Report Contents continued:

Figures (continued)

- should have a purpose & impact - modify /annotate /create:
  - use colours to indicate points or features of interest to your "story". (Hand drawn is fine for this report – we are not evaluating your use of graphics packages / artistic skills. Ensure each image clearly provides your message.
  - crop /pair /overlay / highlight weather maps, satellite images, graphs. Locate points of interest, PG, province of BC, fronts, etc.
  - create original images when helpful
- compared figures are on the same page

Report Contents continued:

Figures (continued)….

Embedded in the text versus in an Appendix

A report style issue - **we require embedded figures!**

All figures (graphs, maps, tables, etc.) **are located where they are first discussed in the report body.**

Only use appendices for required, but less applicable information /data that would detract from the case study if it were inserted in the report body (e.g. the required Appendix I and II: weather diary, data rationalization)

Other than the required two appendices, we generally recommend **not** using additional appendices

Report Contents continued:

Figure Captions

- introduce the figure
- make a figure's content & purpose clear BUT doesn't discuss or interpret the figure
- often refers to figure elements or annotations to aid understanding /discussion /interpretation in the report body
- includes a citation where needed
- are placed consistently with respect to the figure (usually on the bottom)

Report Contents continued:

Conclusion(s)

A brief report synopsis

- based on information already presented in the report body
- briefly restates your key findings & evidence
- your report's "take-home message"

References

Referencing:

What is a **citation** vs a **reference?**

Why Cite & Reference?

- Identifies where to find more information on a topic
- Provides credibility for an argument or statement
- Properly credits the work / ideas of others
- Shows you know related literature
- Streamlines. By summarizing & referring to other material you avoid plagiarism /redundant information
- Don’t cite your own work unless it’s published elsewhere

Referencing: (continued)

All sources must be **cited** in the report body (where you discuss the source's information in your report)

Each citation has a complete **reference** (and is listed in your References section)

Complete citations & references allow readers to find your sources and know what information to expect from them

Citation & reference requirements /details are defined by the referencing style

Referencing: (continued)

Use **Council of Science Editors (CSE) 9th edition Name-Year** style: References & in-text citations are "(author year)" or "author (year)" format; longer references require specific page number(s) and changing images require specific dates and times. Reference list is sorted alphabetically by author.

What information needs to be included?

- Find CSE information on the UNBC Academic Success Centre, Handouts webpage:
  - https://www.unbc.ca/sites/default/files/sections/academic-success-centre/cse-style-2025.pdf

CSE-9 Referencing Examples:

CSE-9 reference for a website that hosts a pdf of a document written by an organization:

[FAO] Food and Agricultural Organization of the United States. 2015. Agriculture under a climate change regime. Washington (DC): FAO Press. http://www.fao.org/agri-clim-change/en/pdf-booklet

[Note: Include the date of retrieval only if the content of the page is likely to change over time. Usually not needed for a report or other static document like a PDF. For documents longer than 20 pages, we want you to include the relevant page number(s) in the in-text citation]

CSE-9 citation for the above source:

This report analyses Prince George weather over a four-day period. Though climate doesn't determine the weather experienced in any time period, generally Prince George can have both cold wet years and warm drier ones (FAO 2015, pp.78-85).

Primary vs Secondary Sources

- Primary: information from the original source
- Secondary: information from a source that relays information from the original source

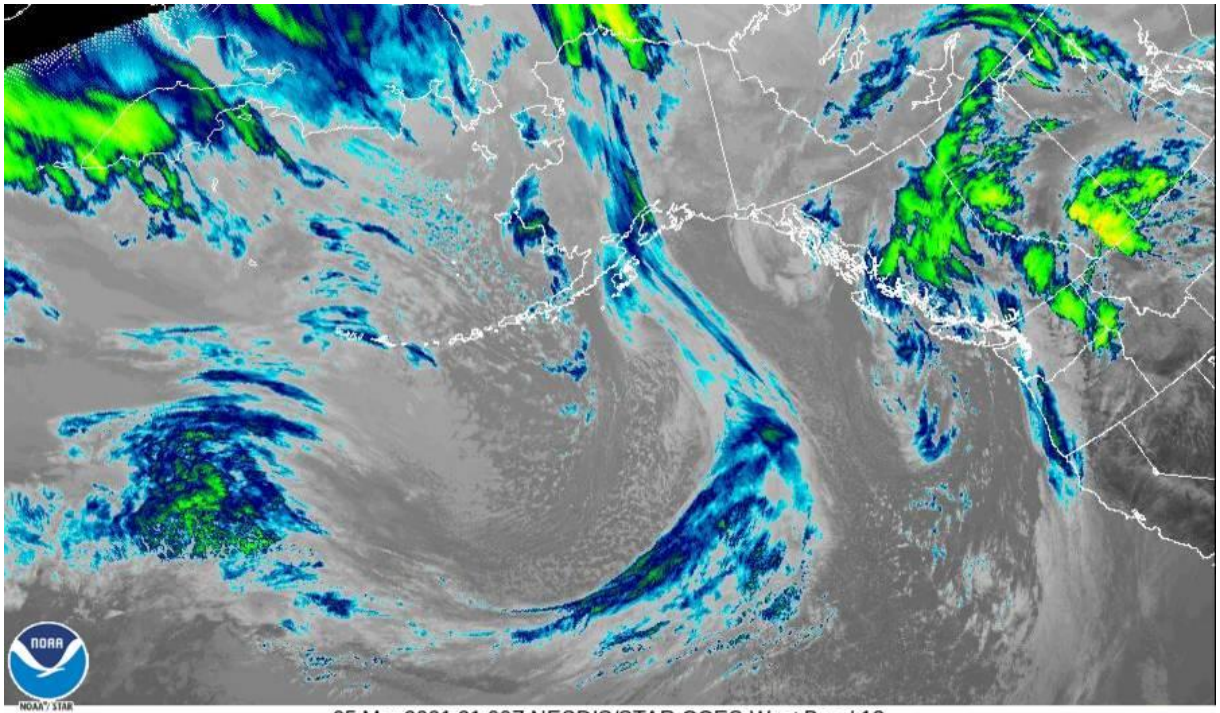
Primary referencing is correct.

Important for our weather maps & images if you used the Wx Viewer (cyclone) website. The cyclone server is a secondary source as it relays materials from their original sources.

Correct references include the URL of a material's original source

CSE-9 Weather Image Referencing Style Example:

NOAA Alaska IR Satellite image collected from UNBC Wx Viewer hosted by cyclone.unbc.ca
(the secondary source)



05 Mar 2021 21:00Z NESDIS/STAR GOES-West Band 13

NOTE: Weather maps and satellite images are cited / referenced as a website with a retrieval date, because the images are constantly changing.

CSE-9 Weather Image Referencing Example:

Collected from (the secondary website): https://cyclone.unbc.ca/cgi-bin/cgi-bin2/fetch_loops_simple.pl?SUBHEADING=SATELLITE_IR_Goes-W_Alaska

Primary source (image provider – this is the one you must cite):

https://www.star.nesdis.noaa.gov/GOES/sector.php?sat=G17&sector=np

CSE-9 reference:

For data / images on a website produced by an organization like ECCC or NOAA, the organization is the "author".

[NOAA] National Oceanic and Atmospheric Administration. 2025. GOES-West – Sector view: Northern Pacific, Band 13. U.S. Department of Commerce. [updated 2025 Feb 26]. *https://www.star.nesdis.noaa.gov/GOES/sector.php?sat=G17&sector=np*

(Note, because the image is changing and not archived, the retrieval date is needed. If you use multiple images from the same general site, then you might instead list a range of dates… "[updated 2025 Feb 26-29] to avoid having to enter a separate reference list item for each image.)

CSE-9 in-text citation, needs the day & time as there are multiple images per day.

- NOAA (2025 Feb 26 06Z) or (NOAA 2025 Feb 26 06Z)

Avoid Academic Misconduct

DON'T

cheating....copying…plagiarism

Only work with others to brainstorm ideas, discuss what happened, etc.. The **report must be independently written**

This means DO NOT SHARE your:

- writing
- annotated graphs, maps, or figures you created

Properly cite & reference anything that you did not create, including figures, maps, graphs, and images

Note on Use of Generative AI

- Generative AI such (e.g.ChatGPT) is not useful in for writing your report – there are no prior case studies for our weather period. DO NOT use AI to produce or edit your text for content, expression, or ideas.

- If you use AI for any purpose in creating your report, then its use **must** be disclosed / described in your introduction or methods and cited in the report body in this format: (Author, Format, Date [DMY]) e.g. “(OpenAI, ChatGPT, 23 Feb 2025)”; CSE considers it “personal communication” so it is not listed in the references.
- You don’t need to cite /reference your use of ordinary spelling / grammar checkers such as tools built in to MS Word.

Last Words

- See your instructors if you're not sure about something
- The Academic Success Centre (ASC) offers support for writing…but get involved with them early

Be clear, readers can't read between the lines.

Well written reports are usually impressive.

We give bonus marks!

Come prepared for your 15-minute WxProj Report Writing Meeting. **Bring:**

- **your report outline** (printed, typically 1 page, more information below)
- **your draft, stacked time series graph** (hand-drawn, of your final data, having Appendix 2 can be useful too)
- **a printed copy of the UNBC Wx Stn graph** (colour print, or highlighted to distinguish graphed lines)
- **your diary** (or Appendix 1 if your diary is already formatted as the Appendix)
- **access to selected synoptic weather data** (organized, considered surface maps, 500 hPa maps or satellite images that explain /provide evidence for your weather (wx) story. Set-up & ready to use on a computer /memory key.)
- **prepared thoughts /current questions** about your wx story. Any related items you want to discuss.

Preparing for your WxProj Report Writing Meeting Interview (Interviews are done in your lab as scheduled)

- ❑ **Review & interpret your data, look for interconnections /possible supporting evidence**. Look for weather patterns, possible relationships between variables, links between graphs, your diary, synoptic data and links to course concepts. Use all information sources. Try to explain how these indicate the wx story. **Make notes on what you find**, where do links occur; what are; what are your evidence sources? **Consider your:**
  - **weather diary** (possibly already formatted as Appendix 1), especially the synopses can be useful starting points
  - **draft, stacked time series graph**, created from your rationalized data. It must be accurate, complete, useful for interpretation. It pictorially represents your data & best shows patterns & trends. It complements & reinforces other local data.
  - **UNBC Wx Stn graph** printed (using colour or highlighting), shows our 4-day weather period
  - **synoptic data** organized & reviewed by time, indicates the larger (regional scale) weather setting. View connected images in sequence (as demonstrated in labs /lectures). Look for changes between images to see possible reasons for our weather.
- ❑ **Write an outline** (~1 page) **indicating your:**
  - current understanding /ideas of the 4-day wx story (what happened, when it occurred, and why)
  - plan for formatting your report: Section /subsection headings, report structure /organization ideas /questions
  - ideas for supporting evidence and how you might use it
  - questions about: Where you are stuck /something you don't know /what you think you'll do /how to proceed
- ❑ **Any report related item you wish to discuss** but note there may not be time to discuss everything in this meeting.

Week of March 10 in Lab:

- You will be meeting with an instructor for a 15-minute interview concerning your WxProj report. Come when your 15 minutes are up.
- This is a marked component worth 2% of your course grade
- Slides on what to bring and how to prepare will be reviewed in labs next week