**General Style Notes**

Things to keep in mind for all or most deliverables.

* Use the correct filename: “YearTerm\_NODE\_ProjectShortTitle\_DeliverableType\_Draft(FD/RD)”
  + 2021Spring\_ARC\_PacificNorthwestHealthAQ\_ProjectSummary\_FD
* Use the correct formal node name for each deliverable a
  + (e.g. Alabama – Marshall, Arizona – Tempe, California – Ames, California – JPL, Colorado – Fort Collins, Georgia – Athens, Idaho – Pocatello, Maryland – Goddard, Massachusetts – Boston, North Carolina – NCEI, or Virginia – Langley).
  + Note that this dash in an “en dash,” i.e., a longer dash than the one located on your keyboard.
* Deliverables must be written in **Microsoft Word or PowerPoint**. Use your Microsoft Office 365 accounts!
* The first letter of each word in the title, subtitle, and VPS title are capitalized (APA title case).
* The short title should be a combination of the study area and application area. If the project is a continuation, ‘II’ or ‘III’ should also be included.
* **Do not double space after periods!!**
* Do not use slash marks within a sentence. They are fine to use in a list if necessary.
* Semicolons should be used to separate two independent clauses (meaning they are both complete thoughts and the semicolon could be replaced with a period).
* Use “i.e.” (meaning “that is”) to give further explanation of something. Use “e.g.” (meaning “for example”) to give a few examples, not a complete list.
* NASA’s EOS ([Earth Observing System](http://eospso.gsfc.nasa.gov/mission-category/3)) is a system sub-set of NASA missions focused on specific areas of climate science. Not all NASA satellites (and therefore not all of the satellites used by DEVELOP projects) are in the EOS. It is generally best to avoid using the term “EOS” in deliverables. Using “Earth observations” or “EO” is usually sufficient.
* Consistency is key!
  + Capitalization – for example, in the Earth observations section of the Project Summary, if one parameter is capitalized, the rest should capitalized
  + Pronouns – “we”, “the/our team”, or “the project team”are good options
  + When writing Earth observations, compare satellite and sensor formats. For example, if you write “Landsat 8 OLI” (satellite & sensor), don’t just write “Sentinel-2” (satellite).
* If you used ESA data, the following legal statement must be included within ALL of your deliverables:
  + This material contains modified Copernicus Sentinel data (insert year), processed by ESA.

**Project Summary**

The Project Summary is your go-to document for project information. The content in this document is compiled for reporting to NASA HQ and is often shared with future teams, partners, and the Capacity Building and Applied Sciences Programs. You can use this to complete your project page on DEVELOPedia.

###### *General Writing & Formatting*

* The formatting for each section should match the template:
  + All text is Garamond, 11-point font.
  + Science advisor affiliations are in parentheses.
  + Bullets are used for the Community Concerns, Project Objectives, Ancillary Datasets, Modeling, and Software & Scripting sections.
* Write in past tense (except for the Product Benefit to End User and the Project Continuation Plan sections – write those in the future tense). Use active voice as much as possible. Here are examples in the past passive and past active voice:
  + Past passive: Three 2-L samples were taken at a depth of between 0.1 and 0.5 m at the down-wind end of each wetland.
  + Past active: Each of the three groups took 2-L samples at a depth of between 0.1 and 0.5 m at the down-wind end of each wetland.
  + [www.englishpractice.com/improve/active-passive-voice-simple-tense/](http://www.englishpractice.com/improve/active-passive-voice-simple-tense/)
* *Each paragraph should have at least three sentences.*
* Spell out all acronyms the first time they are used in the text, even if they have also been spelled out in the abstract.
* Change “(s)” for any given section
  + For example, “National Application Areas Addressed” on the template should read either:
    - National Application Area Addressed: Application Area 1
    - National Application Areas Addressed: Application Area 1, Application Area 2

## Project Overview

###### *Project Synopsis*

* This short overview provides a **brief** and **catchy** synopsis of the project and its objectives for media sources. Avoid going into great detail like listing out your Earth observations.
* **Word count limit**: 1 to 3 sentences; 80 to 100 words

###### *Abstract*

While not a separate deliverable, the abstract appears in the Project Summary, Tech Paper, Poster, and on the DEVELOP website. It is a short summary of your project that introduces the problem, partners, NASA EO, results, and significance. The abstract “lives” in the project summary until the final draft.

* **Word count limit:** 150-250 words and only one paragraph.
* Write in past tense and avoid passive voice.
* Acronyms should be spelled out the first time they are used in the abstract, and then also the first time they are used in the text.
* There should be no citations in the abstract.
* Any changes made to the abstract should be reflected in your final draft in the Project Summary.
  + If you need to make changes to your abstract *after* you’ve submitted the Project Summary FD, send any updated versions to the Project Coordination team and ensure that the updated version is used on any subsequent deliverables and on your project page on DEVELOPedia.
* The Abstract **must** include the following:
  + What the problem was
  + Who the decision makers are and what the decision being made is
  + The partner organization(s) with whom you partnered
  + What NASA Earth observations were involved
  + What you did in response to the problem
  + What the benefits or outcomes are/will be
  + What your results were
* Abstract best practices:
  + The abstract should be fully contained and give the reader a good grasp of the project.
  + While there is a maximum word limit, say it with fewer words if able.
  + State the most important information first.
  + Write in active voice and avoid passive words like “might” or “could” – use powerful language.
  + Spell out all acronyms except NASA.
  + Do not define terms.
  + Read other projects’ abstracts for inspiration.
  + Any major restrictions or limitations on results (if results are included) should be stated.
  + Reread the abstract. Did it answer: **who, what, when, where,** and **why?** If it didn’t, revise it!
  + Don’t forget to add results for the final draft – feel free to include a placeholder sentence in your rough draft.

###### *Key Terms*

* This is a list of key words and terms that can be used to search for your project.
* When choosing keywords, do not include words already listed in your project title.
* Pick terms that describe your project well and are specific to your project. Try to avoid simply listing the Earth observations you used.
* Only capitalize any acronyms or proper nouns. Do not capitalize the first term if it is not a proper noun.
* **Word count limit**: 2 to 8 key terms

###### *Study Location and Study Period*

* List each state in the study area section with its postal acronym
  + Ex: Western shore of Lake Michigan bordering WI, IL, and IN
* If working on a seasonal project, include study period months as well as years.

###### *Community Concerns*

* All bullet points should be in complete sentences and have periods.
* Relate the problem back to the community (or communities). Avoid general statements or describing the problem itself – be specific about how the issue impacts the community.

###### *Project Objectives*

* Objectives should not be in complete sentences or have periods.
* These should match the objectives you put in your Presentation and Poster (optional) deliverables.
* Be succinct and start each objective with a strong action verb.

## Partner Overview

###### *Partner Organization Table*

* Follow proper partner nomenclature and include the full partner org name with any larger/umbrella orgs first.
  + Ex: National Park Service (umbrella organization), Glen Canyon National Recreation Area (specific office being partnered with)
* If there is more than one point of contact (POC) for an organization, list them in the same box separated by semi-colon.
* List end users first. Each partner is **either** an end user **or** a collaborator, not both.
* Boundary organizations are also listed as either a collaborator or an end user, and the notation for boundary organization is at the end of the listing.
* If you add or remove any partners during the term, **make sure to notify the Project Coordination team!**

###### *Decision-Making Practices & Policies*

* **Word count limit**: one paragraph
* Describe the decision-making practices employed by the end user(s) and/or any policies in play that oversee the management of a certain area, land cover type, or issue?
* Solely focus on the partners’ current decision-making process, not what your project willcontribute.

## Earth Observation & End Products Overview

###### *Earth Observation Table*

* List each instrument on an individual line, even if the parameter and use are the same.
  + Example: Landsat 5 TM, Landsat 7 ETM+, and Landsat 8 OLI should all be in separate rows.
* Use past tense in the Use column.
* List the platform then the sensor, not just the sensor (e.g. ISS ECOSTRESS, not just ECOSTRESS)

###### *Ancillary Datasets*

* List any non-satellite or airborne datasets used. Do not list satellite datasets or other Earth observations in this section.
* List the creator organization first, then the name of the dataset, then what you used it for.

###### *Modeling*

* The point of contact should be someone in contact with the team who has experience running and troubleshooting the model. The POC does not need to be someone affiliated with the group that produced the model.
* If you did not use modeling in your project, delete this section.

###### *Software & Scripting*

* List any software or scripts you used in your project. For software or languages with a version number, include that as well. (e.g. “Esri ArcMap 10.5 – used for map creation and data processing”)

###### *End Product(s) Table*

* This table is different from the one listed in the project proposal!**Do not** copy and paste from the proposal.
* Write in future tense for the Partner Benefit & Use column.
* Double-check the Software Release categories with your Fellow (if applicable)

###### *Product Benefit to End User*

* Describe how the results and end products of this project will benefit the end user’s decision-making process. What are the short-term considerations of this work for your partner? Long term?
* Write in future tense.
* **Word count limit**: one paragraph

###### *Project Continuation Plan*

* Remove this entire section for one term projects or projects that will not continue to another term.
* Describe what is being handed off after the conclusion of your term and how the next term can build off of your team’s work.

## References

* Use APA format only for your citations.
* List any sources that helped you write your Project Summary. Do not cite sources in-text.
* Use 1 to 5 citations – save the full list for your tech paper!

**Tech Paper**

The Tech Paper provides the technical details for partners and future DEVELOP teams to replicate and understand your project analyses. It fully explains the problem, provides a scientific basis for your methodology, and thoroughly explains your results and what they mean for your project partners. It can even act as a foundation for a future publication.

###### *General Writing & Formatting*

* The entire tech paper (everything before the references & appendices) should be no longer than 12 pages.
* Write in past tense. Use active voice as much as possible. Here are examples in the past passive and past active voice:
  + Past passive: Three 2-L samples were taken at a depth of between 0.1 and 0.5 m at the down-wind end of each wetland.
  + Past active: Each of the three groups took 2-L samples at a depth of between 0.1 and 0.5 m at the down-wind end of each wetland.
* *Each paragraph should have at least three sentences.*
* Spell out acronyms the first time they are used in the text, even if they have also been spelled out in the abstract.
* The formatting for each section should match the template:
  + All text is Garamond, 11pt font
  + The subtitle is not italicized
  + Text is left justified throughout the document.
  + Heading levels are consistent.

###### *Figures & Images*

* Reference all figures and charts within the text.
* Figures can be grouped. Text and map elements do not have to be separate. However, text must be large enough and clearly legible (no blurry text).
* Consider image gallery or other way to share additional images/figures with partners – *you don’t have to include everything in the tech paper*.
* Including a lot of high-resolution images exported from ArcGIS could make your tech paper file size very large. Consider compressing images in your tech paper by clicking on the image -> Picture Tools -> Compress Pictures.

###### *Equations*

* Number equations and reference them within the text.
  + The equation number should be right aligned and the equation itself should be middle aligned.
  + Garamond font – find Normal Text on the left side of the Equation Tools tab

## Abstract

* Key Terms should be the same as the Project Summary; only 2-8 words

## Introduction

* Be concise; this section should be between 500 and 800 words as one to two pages should suffice
* A minimum of 5 references is required for the introduction section (e.g. information about your focal species, habitat, or problem, scientific basis for your methods, etc.).
* Include a study area map (with north arrow & scale bar)
* **Background Information**: Things to include (in whatever order you think flows best):
  + Background Information – Relevant information to inform the reader of the current status, environmental issues, decision making, etc.
  + Scientific Basis – previous studies, the scientific basis of your methods and how they have been used in previous research, etc.
  + Study Area – Describe the geographic location of the study.
  + Study Period – Explain the time period of data you are looking at (years and dates of data). For II & III term projects – Include a paragraph discussing what was done and/or found in the previous term
* **Project Partner & Objectives:** 
  + Project Partners – Explain who the project partners are, why they are interested in this project, how they will use it, what decision making they have to do and is being addressed with this research and methodologies, etc. How will they benefit from this project and methodology?
  + Project Objectives – These should be short decisive action items in paragraph form, not a bulleted list.

## Methodology

* This should be the focus of the paper – concise, yet explanatory. Highlight the NASA Earth observations utilized and their capabilities. Include a paragraph or more for each of the following items. There is no word cap, but be thoughtful and keep it in the 2- to 6-page range.
* Be specific in why you did particular methods – don’t leave the readers hanging. Are you answering “The Five Ws” (who, what, when, where, & why)?
* **Data Acquisition** 
  + What data did you get, what level products are they, for what dates did you get images, where did you get the images from, etc.? Consider adding a table to display this information if you are using multiple platforms/sensors.
  + Each paragraph should have at least three sentences.
    - You don’t need a separate paragraph for each data source under the Data Acquisition section. Group content together so you have substantive content.
* **Data Processing**
  + What did you do to the data? Were there conversions needed to be able to analyze it? Did you have to mosaic images? Did you have to normalize anything to fit other datasets? Did you run an NDVI calculation, change detection, etc.?
* **Data Analysis**
  + How did you analyze the data – statistical analysis, validation, etc.? What methods did you use?

## Results & Discussion

* Insert images, graphs, maps, charts, etc. in this section. Choose the most important results to highlight here. No word cap, but 2 to 6 pages is a good range.
* **Analysis of Results**
  + What can you tell from your graphs, images, etc.? What does this mean for your project?
  + What factors could you not account for? Include an error analysis. What things didn’t work out like you expected they would, etc.?
* Future Work
  + If your team had more time to work on this project, what additional analyses would you pursue? If this project were to be selected for another term, what would be the focus? What additional research questions and topics would your partners wish to investigate themselves or have DEVELOP pursue in the future?

## Conclusions

* Word count: 200 to 600, about a page.
* Synthesize your results here – how do they relate to your community concerns, how will your partners benefit from the project results, etc.?
* Conclusions should summarize the main findings and major implications of the study. Things like “We made a map” are not proper conclusions. What does the map show and what does that mean to your question and your partners?

**Acknowledgments**

* Keep to a concise paragraph or bullets of names. End with the following sentences:
  + This material contains modified Copernicus Sentinel data (insert year), processed by ESA.
    - (Only if you used European Space Agency data from a Sentinel satellite)
  + Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Aeronautics and Space Administration.
  + This material is based upon work supported by NASA through contract NNL16AA05C.
* Copernicus Sentinel data acknowledgement, if used:
  + This material contains modified Copernicus Sentinel data (insert year), processed by ESA.

## Glossary

* Define field-specific terms and acronyms. The goal of this section is to help the reader better understand the work presented in the paper. Include vocabulary that the reader may not be familiar with, in addition to defining the acronyms in your paper.
* Be consistent with how you write each entry (i.e. sentences vs. fragments).

## References

* The references section is formatted consistently using APA formatting.
* Includes Digital Object Identifiers (DOIs) for NASA and other satellite data products.
* Only include articles & data cited within the body of the text. It’s great if you read many other articles, but they should not all be listed here unless they are being cited in this report.

## Appendices

* If there are no appendices, the heading is deleted.
* Use appendices to include detailed information that would be distracting in the main body of the paper (e.g. supplementary information, equations, maps, etc.).
* Each distinct item should have its own appendix. Separate content into multiple appendices if necessary.
* Restart numbers labels for tables and/or figures at each appendix (i.e., A1, A2, etc. for Appendix A, B1, B2, etc. for Appendix B), if necessary.
* Don’t forget to refer to your appendices in text.

**Presentation**

Use the presentation to tell the story of your project – compelling science communication involves a narrative. Presentation skills are critical to effectively communicate your science to partners and for conference presentations.

###### *General Writing & Formatting*

* The formatting for each section should match the template:
  + All text is Century Gothic.
  + All text is Black, Text 1, Lighter 25%.
  + Header text size should be between 32 and 44 on most slides.
  + Body text size should be at least 20.
  + Image credits text size should be between 11 and 14.
  + All other text (captions, legend items) should be no smaller than 14-point type.
  + Try to use consistent font size between slides.
  + The bullets used should be the standard solid circular bullet and should be the designated color for your project’s application area.
    - (Note: you can’t change bullet colors in Office 365 online. You can copy bulleted text boxes from the template’s examples slides and then paste them in.)
* Every slide should have speaker notes that are detailed enough for someone unfamiliar with the project to give the presentation. It is not uncommon for a Fellow or member of NPO to present a project at a later date – these notes are crucial for giving a quality presentation.
* Slides should be mostly visual, using the least amount of text necessary to get your idea across.
* Legends should be included (or overlaid) separately from maps, not within the same image.
* Flowcharts should be editable and not saved as an image.
* On your partner slide, use US Federal logos only. No state, NGO, local or international government logos, or logos owned by a private company (e.g. the Google Earth Engine logo).
* If the project is a continuation, previous team members should be included in the acknowledgements section. When acknowledging past contributors, denote their previous DEVELOP location.
* Required statements must be included:
  + NASA legal statements (built into the slide templates)
  + Copernicus Sentinel data acknowledgement, if used (must be added by teams using Sentinel data)
* The Acknowledgement slide must be the one used in the template.

###### *Images*

* **All imagery MUST fit one of the following:**
  + Collected by the team (make sure any people featured have signed media release forms)
  + Provided by the partner (with written permission to use it)
  + From a US federal agency and in the public domain (not taken by a partner)
  + From the DEVELOP collection on Flickr
  + Under a Creative Commons license – not all licenses are created equal! Look up the specific [license type](https://creativecommons.org/licenses/) and make sure your image is cited correctly.
* **All images should be cited appropriately with image source URLs in the speaker notes.**
  + Image Credit: Claude Monet
  + Image Source: <http://commons.wikimedia.org/wiki/File:Claude_Monet_-_The_Magpie_-_Google_Art_Project.jpg> (insert here whether this image is provided by a DEVELOPer/partner, public domain, or the type of creative commons license the image was published under – e.g. CC BY-SA)
* Map base layers should also be cited in the speaker notes. It’s not necessary to cite base layers on the slide.
* If you use image borders, they should all be a consistent width and color throughout the presentation.
* Background images are not recommended. If you use one, make sure that your text remains clear and legible.

###### *Maps*

* Make sure all text is legible and in Century Gothic font.
* Add legends separately so they can be moved or resized.
  + Avoid using "legend" as its title, instead use descriptive names for legend items
* A scale bar is required for reference on all maps and should not be separate but the scale bar text should be.
* A North arrow is required.
* Inset maps are suggested to give context to your map’s location.
* Cite base layer source in speaker notes.

###### *Figures & Graphs*

* Keep all images and text boxes editable, including individual elements of flowcharts.
* Do not copy/paste graphs or flowcharts as images.
* Remember, even graph labels need to be in Century Gothic, Black Light 25%.

**Poster**

This optional deliverable is a visual demonstration of your project, highlighting important aspects in an appealing and easy to understand way. These are often presented at node closeout events, conferences, and recruiting events.

###### *General Writing & Formatting*

* The formatting for each section should match the template:
  + Headings are Century Gothic and 44-point font.
  + Text within all images, maps, charts, and graphs are also Century Gothic.
  + All other text is Garamond.
  + Body text size is at least 24.
  + Caption text size is at least 16.
* **Turn on slide guides and keep ALL poster content within the red margins:**
  + Click on the “View” tab -> check all boxes (“Ruler”, “Gridlines”, “Guides”) within the “Show” section of the “View” ribbon
  + (Note: There are no guides in Office 365 online. If no one at your node has the desktop version, you can reach out to a Project Coordination Fellow)
  + The left edges of each of the sections should be lined up and within the guidelines.
* Title case should be used for the project subtitle.
* The abstract on this poster should be the same as the one written in the Project Summary final draft.
* Think of ways to demonstrate the project methodology visually. Think outside the box! Any flowcharts should be separate and editable rather than saved as an image.
* Objectives and conclusions should be in bulleted lists.
* **All images (maps, figures, tables, graphs, etc.) MUST have separate and editable text**:
  + Any text on the study area map should be in Century Gothic font.
  + The map AND legend should not imported as a single image.
* The satellite images in the Earth observations section should come from [DEVELOPedia](http://www.devpedia.developexchange.com/dp/index.php?title=List_of_Satellite_Pictures). Do not cite DEVELOPedia as the source: cite the agency that owns the image (e.g. Credit: NASA-JPL). If your EO is not listed, contact the PC team.
* The results section should be mostly imagery.
* **Make sure your conclusions are engaging and informative.** Conclusions should tell the reader what your work means and how your work relates to the concerns of partner organizations. **Conclusions can be qualitative.** Contact the PC team if you need suggestions or guidance.
* Only US federal agency logos are allowed on the poster; no other logos should be on your poster.
* If the project is a continuation, previous team members should be included in the acknowledgements section. For acknowledging past contributors, include their DEVELOP location.