Improving User Utilization of JPSS Snow and Ice Products

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Responses to Questions

- Describe how SNPP/JPSS products provide continuity from legacy POES, METOP, DMSP, EOS?

VIIRS snow and ice products provide continuity with products from heritage imagers such as AVHRR, MODIS, and OLS, e.g., snow cover (binary and fractional*), sea ice extent, sea ice concentration, sea ice surface temperature, imagery (including icebergs, Great Lakes ice)

AMSR2 and ATMS provide continuity for sea ice concentration, snowfall, snow water equivalent (SWE), snow depth

- What's missing from SNPP/JPSS that is currently used?
    - Automated algorithms for ice motion, ice edge, and icebergs.

– Or is SNPP/JPSS a new capability for our application?

SNPP also provides some new capabilities:
       VIIRS: sea ice concentration, ice "age"/thickness
       AMSR2 : sea ice type (first-year, multiyear),
       ATMS: Snow Grain Size

*See Notes section of slide

Responses to Questions, cont.

– What products are desired that SNPP/JPSS <u>could</u> provide?

Snow Density over land, Snow Depth over Ice, Ice Motions, Iceberg detection, ice edge, Uncertainty metrics, Ice Age (years), freshwater ice concentration and thickness

- What benefits or improvements do you expect from SNPP/JPSS?
  - Expected impact (low, medium, high) and why?

Better spatial resolution from both VIIRS and AMSR2 will provide more detailed structure. VIIRS will help resolve summertime ice edge degradation and concentration over SSMIS. New products can be applied directly into the NIC snow and ice analysis system. Impacts: medium.

Responses to Questions, cont.

- Provide Details on:
  - when do you plan to use the SNPP/JPSS Product?
    - Is there an actionable plan?
    - Is it funded?
    - What is the priority?
    - Have you thought about how you will get the data and have you identified the issues with your operational use of SNPP/JPSS ?

The NIC has already begun using VIIRS imagery. Other VIIRS products are being evaluated (sea ice characterization and concentration; snow cover). AMSR2 products are not yet operational but test data will be evaluated over the next 6-12 months.

There are no funds to transfer AMSR2 products into NIC operations. The use of VIIRS blended products is largely unfunded.

Priority – NIC: high; NCEP (Marine Modeling Analysis Branch) – unclear

Responses to Questions, cont.

- Provide Details on (cont):

  – Are the current legacy products well utilized?

  From imagery and passive microwave: yes

  – Is the SNPP/JPSS product part of a blended product?

  Yes: IMS, NIC charting, NAVO's Arctic Cap Nowcast/Forecast System (ACNFS)

  – What additional work needs to be done to ensure that the SNPP/JPSS product is/will be well utilized?

  The VIIRS Sea Ice Concentration IP needs its own set of quality flags. It needs to be a deliverable IP (despite plans for Block 2.0). More tools and algorithms to assist in product blending and metadata of blended products.

- Are enhancements needed for:
  - Accessibility (data flow, latency, format)

  Desired formats: netCDF, geotiff, GRIB2
  - Product performance (accuracy, precision)

  Additional quality flags and more uncertainty metrics would be beneficial.
  - User applications (modifications to modeling , decision tools, visualization to use the new products)

  Validation and intercomparison tools