



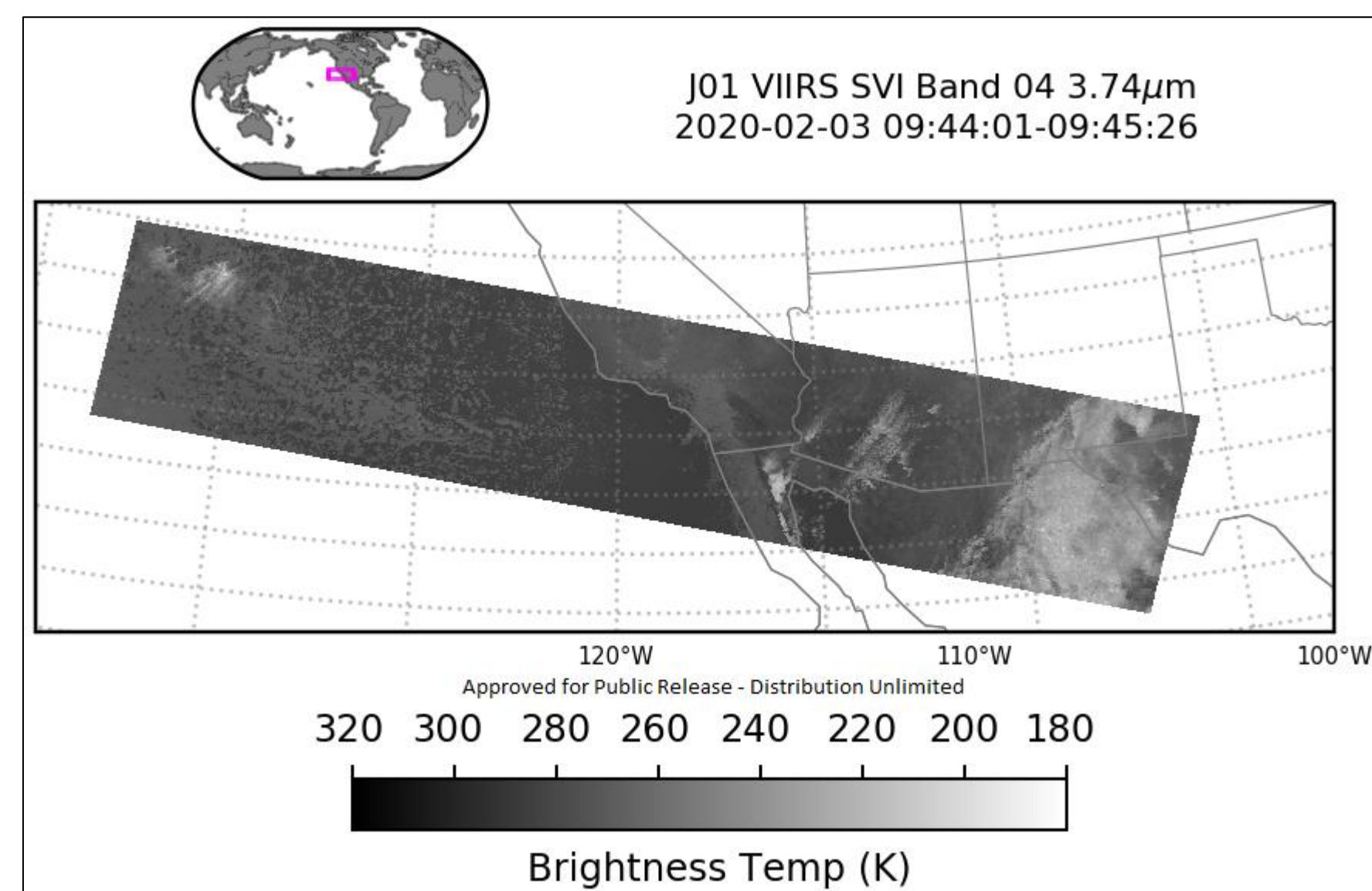
NAVOCEANO's Use of GOES-R and JPSS Data

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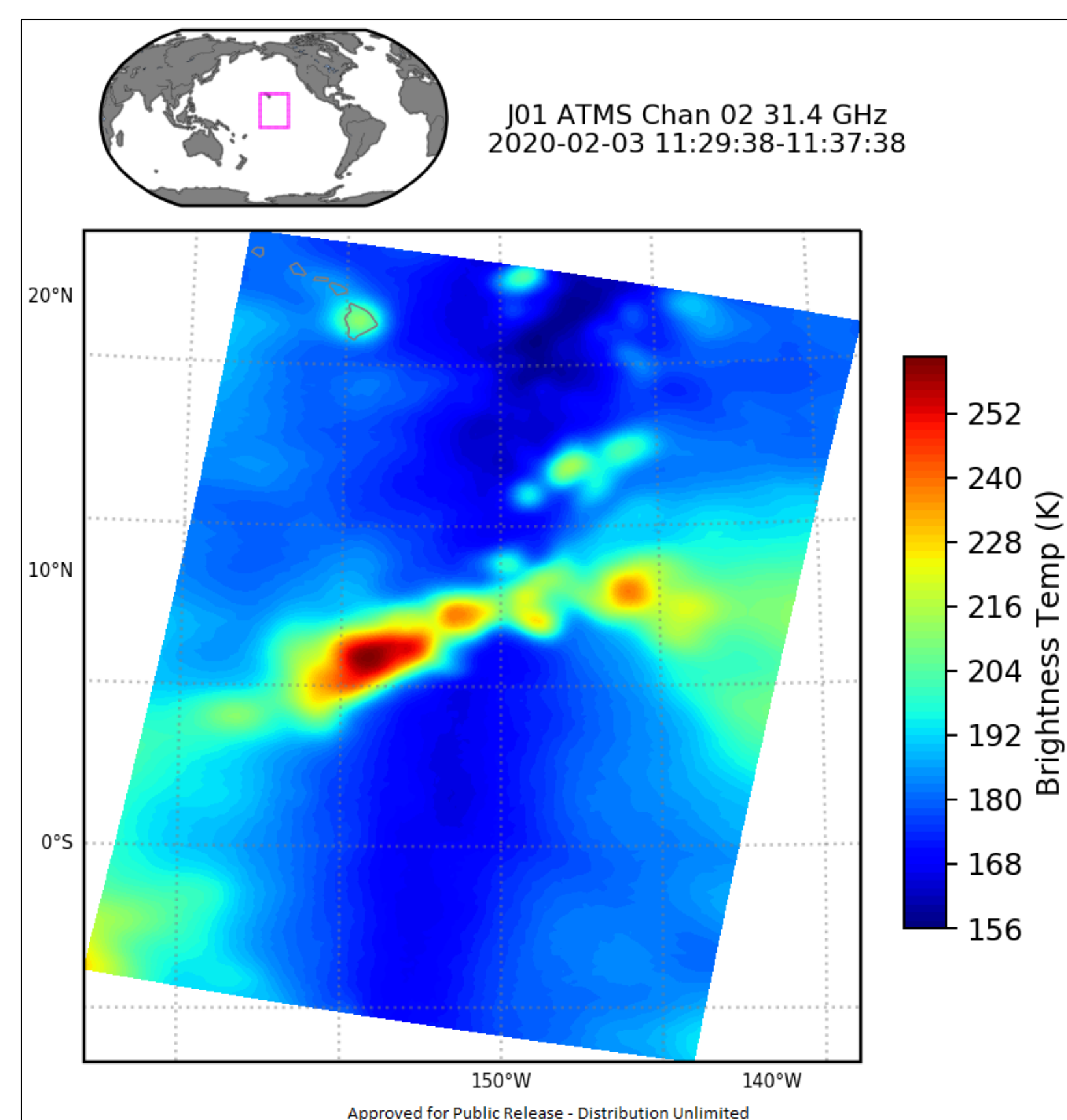


The Remote Sensing Branch of the Oceanographic Data Collection Division at the Naval Oceanographic Office (NAVOCEANO) is responsible for providing near-real-time oceanographic measurements to the US Navy, as well as other government agencies. With developmental assistance from the Naval Research Lab (NRL), numerous sets of GOES and JPSS satellite data are processed in house for input to the Navy's Global Ocean Forecast System (GOFS) and the Navy Global Environmental Model (NAVGEN).

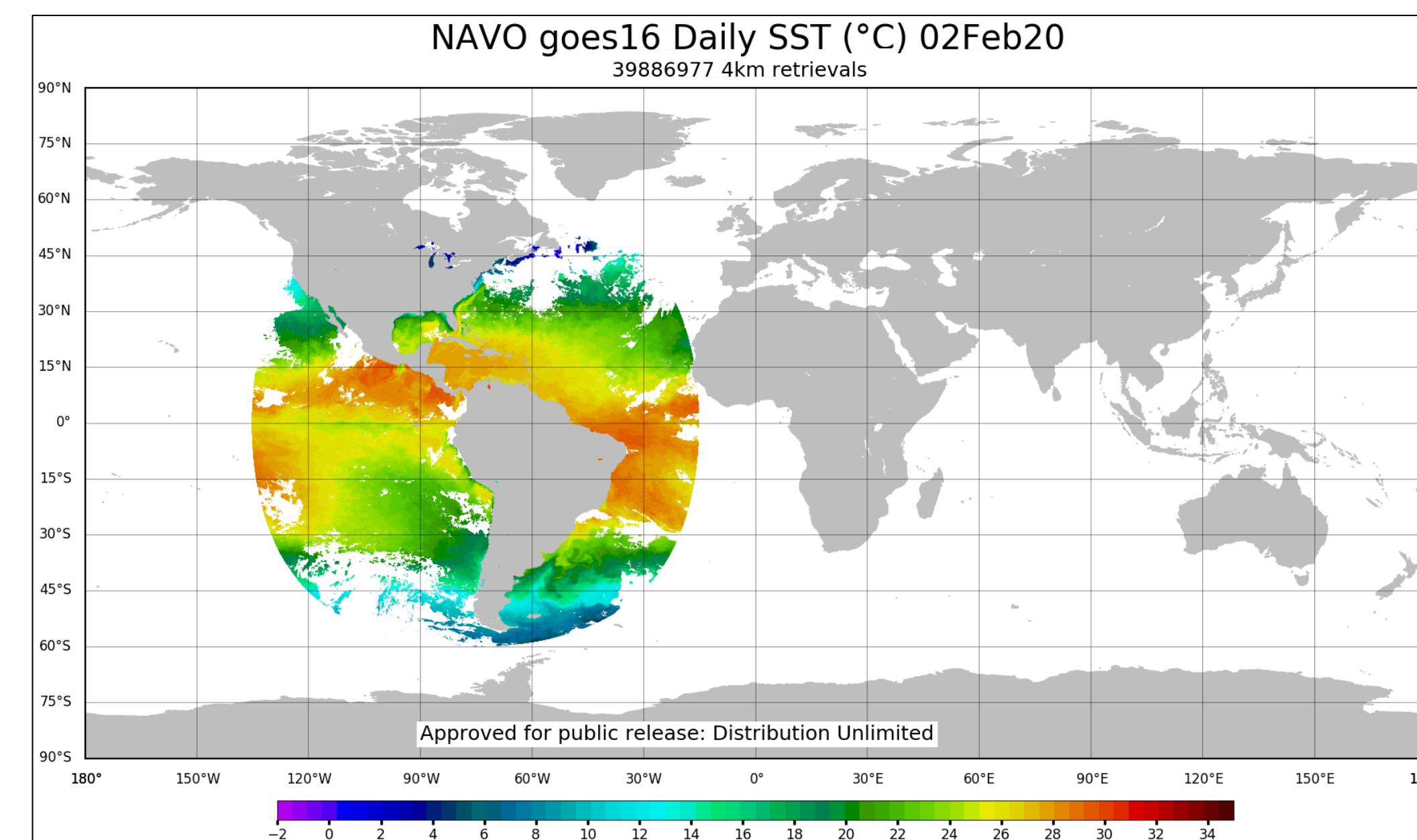
MMSPS



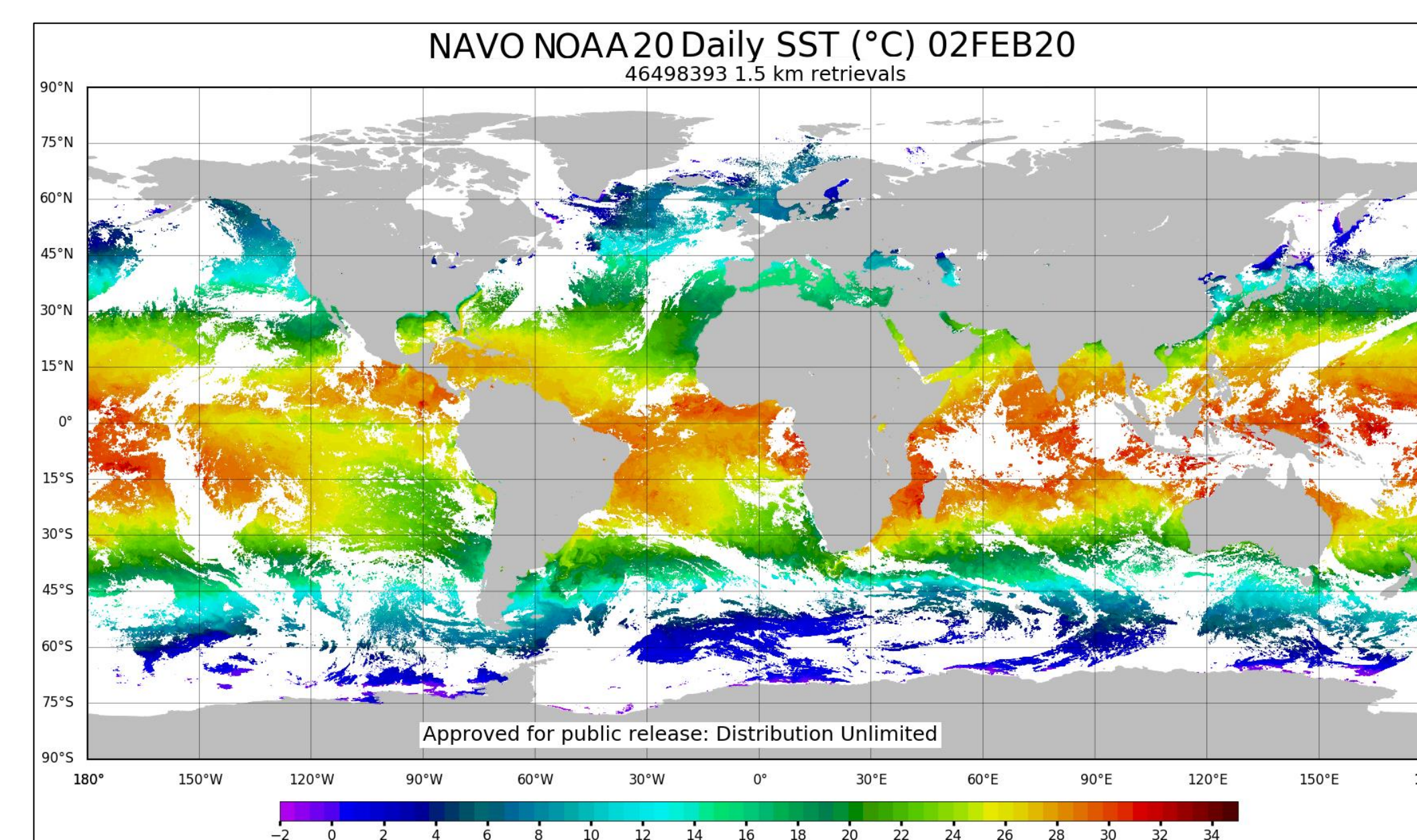
The Multi Mission Satellite Processing Segment (MMSPS) is a system that converts Suomi National Polar-orbiting Partnership (S-NPP), and Joint Polar Satellite System (JPSS-1, now NOAA-20) Extended Application Packet (EAP) raw files for the Visible Infrared Imaging Radiometer Suite (VIIRS) and Advanced Technology Microwave Sounder (ATMS) sensors into Raw Data Records (RDRs). Those are then fed through the Community Satellite Processing Package (CSPP), developed by the University of Wisconsin, to create Sensor Data Records (SDRs). Those SDRs are used by the NRL Ocean Surface Flux System (NFLUX), the Ice Concentration Processing System (ICPS), the Multi Channel Sea Surface Temperature System (MCSST), and the Automated Optical Processing System (AOPS) at NAVOCEANO for in-house data processing and product creation, to support naval operations.



MCSST

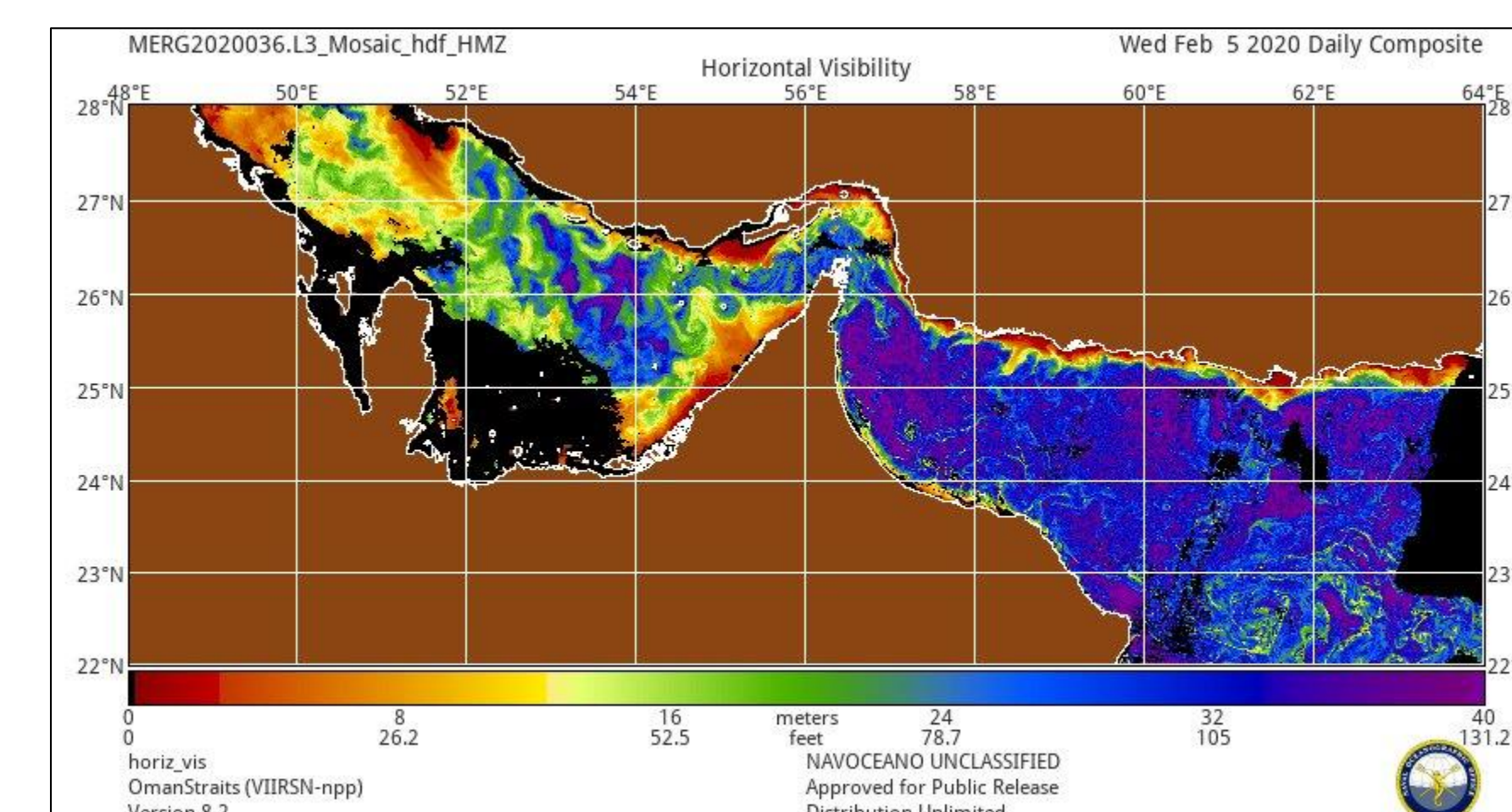
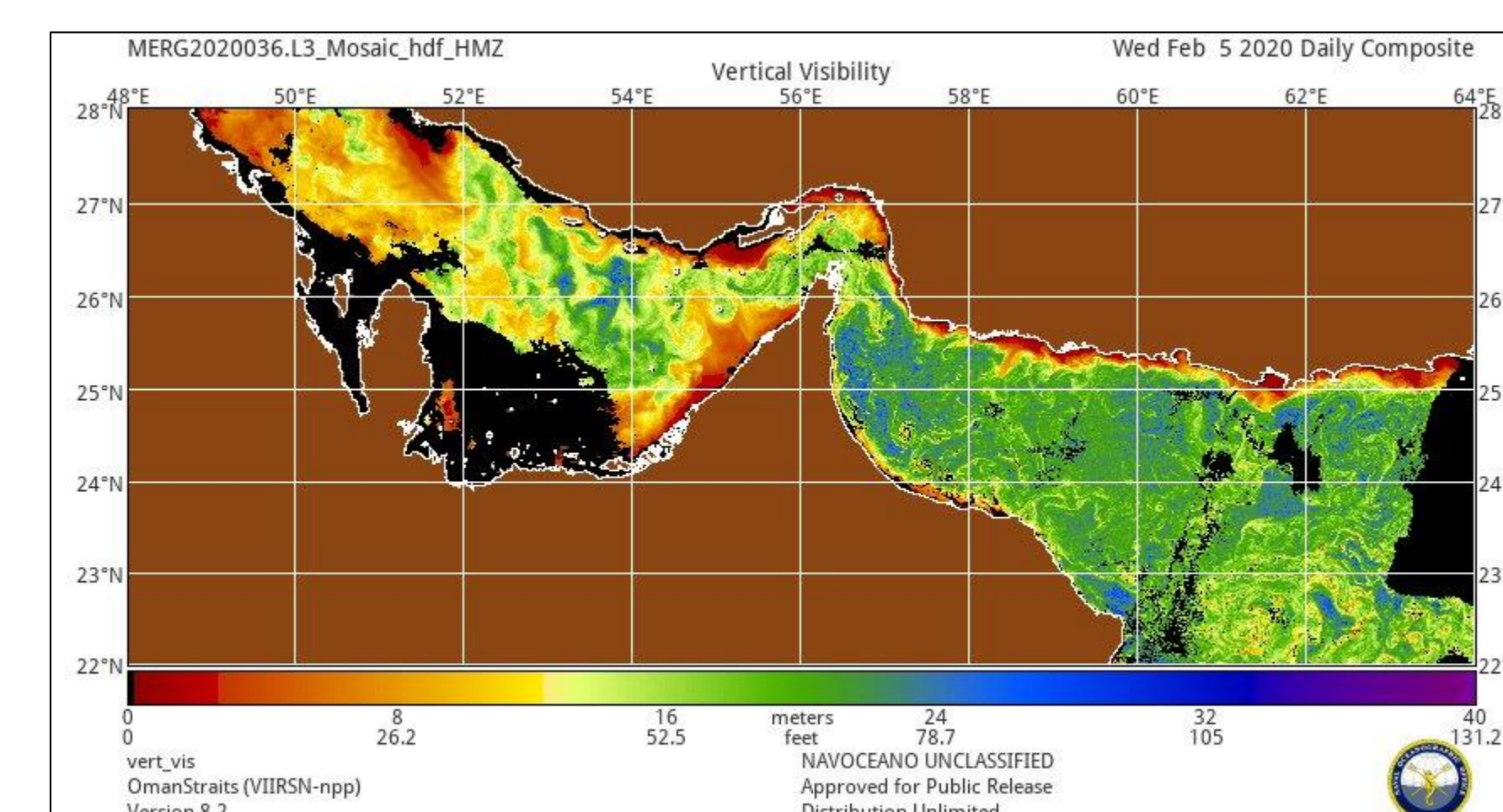


MCSST produces Sea Surface Temperatures (SST) using multiple polar orbiting and geostationary satellites with an in-house suite of software. GOES-16 data, acquired via NCEP College Park, is processed in-house utilizing channels 2, 3, 7, 13, 15, and 16, from the Advanced Baseline Imager (ABI). NAVO processes full disks every 10 minutes with 4km resolution SSTs (2x2 grid). VIIRS data is processed using channels 5, 7, 12, 15, 16, and associated geolocation data. NAVO processes 85 second granules in near-real-time resulting in daily global coverage with 1.5km resolution (2x2 grid of 750m). SST measurements are an important parameter assimilated into oceanographic and atmospheric forecasts, which constrain circulation model initial conditions and quantify the flux energy exchange between the ocean and atmosphere. Real-time ocean prediction systems readily assimilate SST, along with other oceanographic measurements, to generate mesoscale ocean forecasts for operational maritime activities.



AOPS

The Automated Optical Processing System (AOPS) produces in-water water clarity and visibility from multiple satellite-borne sensors, including VIIRS. The near-real-time products are used by warfighters in the Navy to accomplish their tasks more safely, efficiently and effectively. Historical climatology products are also generated for mission asset scheduling. The in-water optical products are implemented in mission planning and naval operations around the globe.



ICPS

ICPS is a system for operationally producing near-real-time ice concentration products from S-NPP, NOAA-20, and Global Change Observation Mission – Water "Shizuku" (GCOM-W1) satellites. Using VIIRS and Advanced Microwave Scanning Radiometer 2 (AMSR2) inputs, it creates ice concentration products for the northern and southern hemispheres. Future updates include higher resolution products and implementation of NOAA-20.

NFLUX

NFLUX is a data processing and assimilation system used to provide near-real-time satellite based surface heat flux fields over the ocean. This system provides satellite based 3-hourly gridded analysis fields over the global ocean for the near-surface parameters of air temperature, specific humidity, wind speed, solar radiation, and longwave radiation. NFLUX uses multiple inputs, including ATMS, from over a dozen different satellites to provide fluxes that will be used to determine NAVGEN bias corrections over the ocean in near-real-time.

