Southwest Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
La Jolla, California

SECTION 515 PRE-DISSEMINATION REVIEW & DOCUMENTATION FORM
(5/2003)

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* = point of contact.

TITLE/DESCRIPTION: MODIS/Aqua Sea Surface Temperature

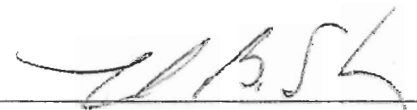PRESENTATION/RELEASE DATE: July, 2002 - ongoing

MEDIUM: Internet

PRE-DISSEMINATION REVIEW:
Name and Title of Reviewing Official: _Dr. Franklin B. Schwing, Director, NMFS
SWFSC, Environmental Research Division_____-_____
      (Must be at least one level above person generating the information product)

      Pursuant to Section 515 of Public Law 106-554 (the Data Quality Act), this product
      has undergone a pre-dissemination review.

_____   _10/2/06_____
Signature   Date

SECTION 515 INFORMATION QUALITY DOCUMENTATION

I. Utility of Information Product

Explain how the information product meets the standards for utility:

A.   Is the information helpful, beneficial or serviceable to the intended user?

      The satellite-derived products generated by the NOAA CoastWatch, West Coast
      Regional Node (WCRN), offer useful information to data customers in easily
      accessible formats. The products are utilized by a wide range of users including
      members of the scientific community, managers, fishing men and women, educators,
      and the interested public.

      The CoastWatch WCRN offers sea surface temperature data derived from the

Moderate Resolution Imaging Spectroradiometer (MODIS) sensor, a 36 channel sensor on NASA's Aqua satellite. This product is retrieved and processed by NASA's Goddard Space Flight Center (GSFC), OceanColor Web.
This product is used by CoastWatch in its experimental Blended SST product.

B. Is the data or information product an improvement over previously available information? Is it more current or detailed? Is it more useful or accessible to the public? Has it been improved based on comments from or interactions with customers?

MODIS SST data are made available in near real-time through the WCRN's Alaska Browser (http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowserAK.jsp) for Alaskan waters, the WCRN's South America Browser (http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowserSA.jsp) for the west coast of South America, and the WCRN's Global Bloomwatch Browsers (http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowserWW180.jsp and http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowserWW360.jsp) for the global oceans. Data can be accessed using any computer with internet access and the appropriate browser. The product is also distributed via THREDDS.

All venues for accessing CoastWatch data and images include information required to contact CoastWatch personnel. Improvements are continuously being implemented based on feedback from customers, with a focus on usability and accessibility.

C. What media are used in the dissemination of the information? Printed publications? CD-ROM? Internet? Is the product made available in a standard data format? Does it use consistent attribute naming and unit conventions to ensure that the information is accessible to a broad range of users with a variety of operating systems and data needs?

This is an internet product, distributed via simple browser, Live Access Server, and THREDDS.

The product is available in formats commonly used by imaging programs (e.g., HDF, netCDF files), GIS programs (ASCII grid), and spreadsheet programs (CSV and other simple ASCII files).

All attributes are named in a manner consistent with NOAA guidelines. All units follow System Internationale (SI) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) guidelines. At the discretion of the user, data may also be displayed and distributed in the units of measurement traditionally used by mariners and marine scientists.

II. Integrity of Information Product

Explain (Circle) how the information product meets the standards for integrity:

A. All electronic information disseminated by NOAA adheres to the standards set out in Appendix III, _ Security of Automated Information Resources, _ OMB Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

B. If information is confidential, it is safeguarded pursuant to the Privacy Act and Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business and financial information).

C. Other/Discussion (e.g., Confidentiality of Statistics of the Magnuson-Stevens Fishery Conservation and Management Act; NOAA Administrative Order 216-100 - Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act.)

III. Objectivity of Information Product

(1) Indicate which of the following categories of information products apply for this product:

    Original Data
* Synthesized Products
    Interpreted Products
    Hydrometeorological, Hazardous Chemical Spill, and Space Weather Warnings,
Forecasts, and Advisories
    Experimental Products
    Natural Resource Plans
    Corporate and General Information

(2) Describe how this information product meets the applicable objectivity standards. (See the DQA Documentation and Pre-Dissemination Review Guidelines for assistance and attach the appropriate completed documentation to this form.)

SECTION 515 INFORMATION QUALITY DOCUMENTATION

B. Synthesized Products
The objectivity of synthesized products is achieved by using data of known quality, applying sound analytical techniques, and reviewing the products or processes used to create them before dissemination. For synthesized products, please document the following:

Data and information sources are identified or made available upon request.

The data source is identified as NASA's Goddard Space Flight Center (GSFC), OceanColor Web. Details regarding the MODIS sensor and NASA's processing of MODIS SST can be found at the OceanColor Website, http://oceancolor.gsfc.nasa.gov/.

NOAA uses data of known quality or from sources acceptable to the relevant scientific and technical communities in order to ensure that synthesized products are valid, credible and useful.

The source data are derived using methods acceptable to the relevant scientific and technical communities. Water leaving radiances are gathered by the MODIS sensor and processed to sea surface temperature by Goddard's Ocean Biology Processing Group (OBPG) using the multi-sensor level-1 to level-2 (msl12) software, the same software used to process MODIS ocean color data. The OBPG's processing of MODIS SST shows excellent agreement with the prior version of MODIS SST processing developed by the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences (*Brown and Minnett, 1999*). Details on the OBPG's processing of MODIS SST can be found at http://oceancolor.gsfc.nasa.gov/DOCS/modis_sst/. CoastWatch uses only the data from daytime passes, which are accompanied by a high-quality cloud-mask.

Synthesized products are created using methods that are either published in standard methods manuals, documented in accessible formats by the dissemination office, or generally accepted by the relevant scientific and technical communities.

The methods employed in the mapping and image generation are consistent with techniques in the published literature. The data are mapped to an equal angle grid of 0.0125 degrees latitude by 0.0125 degrees longitude for the West Coast of North America, a grid of 0.025 degrees latitude by 0.025 degrees longitude for the Pacific Ocean Basin, and a grid of 0.05 degrees latitude by 0.05 degrees longitude for the delayed, science quality data. The mapping uses simple arithmetic means to produce composite images of various duration (1, 3, 8, 14-day), following the recommendations of the International Ocean-Colour Coordinating Group (*Antoine et al., 2004*) and using methods described by *Smith and Wessel, 1990.* Graphical end products are generated using the Generic Mapping Tools software (*Wessel and Smith, 1998*). All datasets are all made available via simple browser, live access server (LAS) and OpenDAP / DODS.

NOAA includes the methods by which synthesized products are created when they are disseminated or makes them available upon request.

A basic description of all methods is included in the accompanying FGDC, CF, COARDS, and THREDDS ACDD-compliant metadata files. More detailed descriptions of these methods are available on-line, with links originating at the WCRN web page. A complete description of the methods, including the program code used to generate the end products from the source data, is available upon request.

NOAA reviews synthesized products or the procedures used to create them (e.g. statistical procedures, models, or other analysis tools) to ensure their validity.

These products are generated and distributed on an operational basis in near real time. In addition to the efforts WCRN takes to ensure data validity, users are cautioned these products may not be appropriate for many scientific applications. Users interested in scientific applications which are not time critical should use the delayed, science quality data.

REFERENCES:

Antoine, D., J. W. Campbell, R. H. Evans, W. W. Gregg, M. R. Lewis, A. Morel, C. Moulin, H. Murakami. 2004. Guide to the creation and use of Ocean-Colour, Level-3, binned data products. IOCCG Report Number 4.

Brown, O.B. and P.J. Minnett. 1999. MODIS Infrared Sea Surface Temperature Algorithm, Version 2.0. Algorithm Theoretical Basis Document, ATBD25. University of Miami, Miami, FL. Under Contract Number NAS5-31361.

Smith, W. H. F. and P. Wessel, 1990. Gridding with a continuous curvature surface in Tension. *Geophysics, 55*, 293-305.

Wessel, P. and W. H. F. Smith, 1998. New, improved version of the Generic Mapping Tools released. *EOS Trans. AGU*, 79, 579.