

Ocean colour instruments

Description

Ocean colour radiometers and imaging spectrometers measure the radiance leaving marine waters in the visible and near IR spectrum in the range 400-800nm, where the colour is characterised by the constituents of the water, typically phytoplankton, suspended particulate material and dissolved compounds. Differences in the intensity of light received in the different bands give information on the concentration of a variety of substances present in the ocean.

These instruments have very narrow detection channels, around 10nm wide, to measure fine spectral details. The spatial resolution of these instruments is typically 0.3 to 1km. The more recent ocean colour instruments have improved spatial, spectral and radiometric resolution. The trend towards multi-channel, multi-purpose sensors, such as MODIS and MERIS, is resulting in more instruments with an 'ocean colour' capability, amongst their many other applications.

Significant calibration and validation activities and algorithm development for ocean colour instruments continues – particularly with respect to measuring ocean productivity.

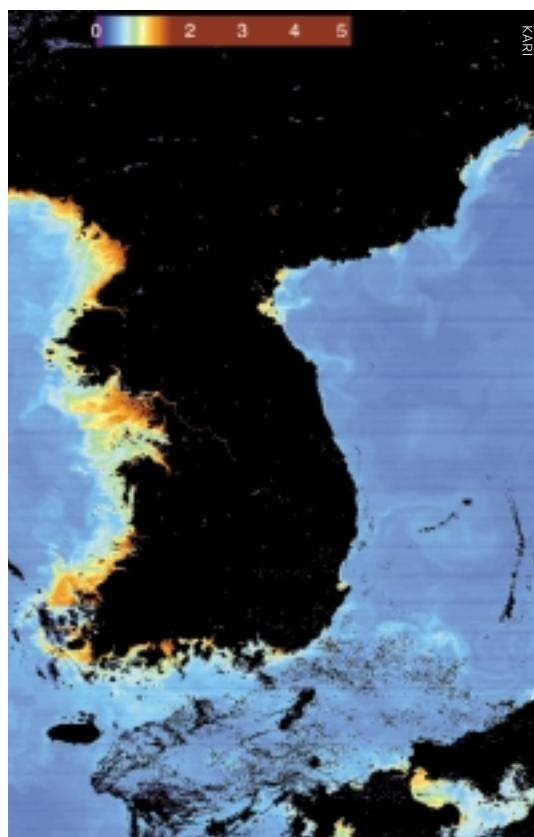


Ocean colour data is used routinely to guide fishing fleets to biologically-rich areas.

Applications

The colour of the oceans as seen from space is an indirect measurement of ocean biomass and its associated productivity, via phytoplankton pigment concentration (chlorophyll). These parameters are of considerable oceanographic and climatological significance as oceanic productivity 'drives' the air-to-sea exchange of biogenic greenhouse gasses (eg CO₂).

Ocean colour imagery can also be used to guide fishing fleets to biologically-rich areas. Other data that may be inferred from ocean colour measurements includes information about suspended matter (useful in coastal studies), biological productivity, marine pollution and coastal-zone water dynamics (eddies, currents, etc).



Ocean colour sensors such as OSMI (KOMPSAT-1) can provide valuable information for coastal studies.

Instrument catalogue

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| GLI |
| MODIS |
| MOS |
| OCM |
| OSMI |
| SeaWiFS |
| VIIRS |
| VNIR |

GLI: sharaku.eorc.nasda.go.jp/GLI/

MERIS: envisat.estec.esa.nl/instruments/meris/

MODIS: modis.gsfc.nasa.gov/

OCM: www.ioccg.org/general/ocm/ocm.html

OSMI: kompsat.kari.re.kr/english/index.asp

VIIRS: www.ipo.noaa.gov/viirs.html