

El Monitoreo de la Calidad del Agua Mediante el Procesamiento de Imágenes Satelitales

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5, 12 y 19 de septiembre de 2018



Esquema del Curso

5 de Septiembre

Resumen General y Análisis de Datos por Teledetección de la NASA para el Monitoreo de HABs



12 de Septiembre

Introducción a SeaDAS para el Procesamiento de Imágenes y Análisis de Datos

SeaDAS is a comprehensive software package for the processing, display, analysis, and quality control of ocean color data. While the primary focus of SeaDAS is ocean color data, it is applicable to many satellite-based earth science data analyses. Originally developed to support the SeaWiFS mission, it now supports most U.S. and international ocean color missions.

The latest version (SeaDAS 7.5.1) is the result of a collaboration with the developers of ESA's BEAM software package. The core visualization package for SeaDAS 7 is based on the BEAM framework, with extensions that provide the functionality provided by previous versions of SeaDAS.

Responsible NASA Official: Gene C. Feldman
Curator: OceanColor Webmaster
Authorized by: Gene C. Feldman

19 de Septiembre

Ejercicio de Análisis de Imágenes con SeaDAS



Aprenda Más Sobre ARSET

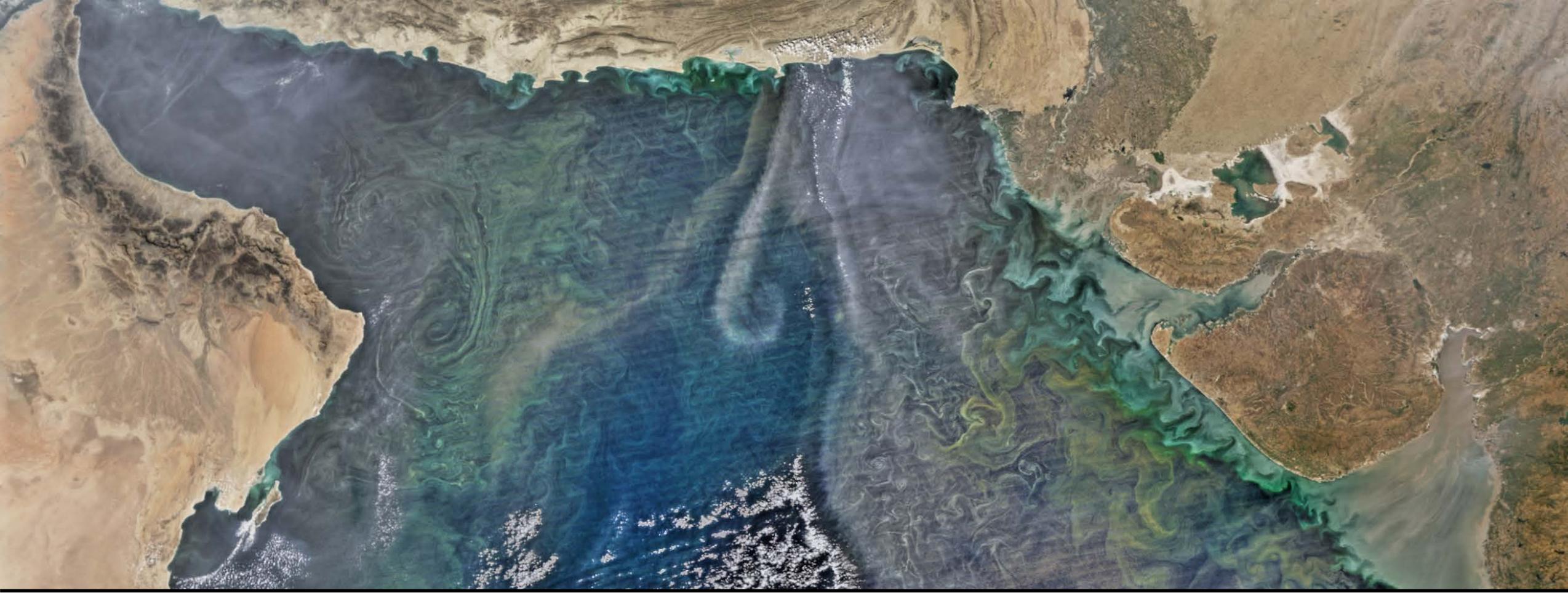
<http://arset.gsfc.nasa.gov/>

The screenshot displays the ARSET website interface. At the top, the NASA logo and 'ARSET Applied Remote Sensing Training' are visible, along with navigation links for 'Earth Sciences Division', 'Applied Sciences', and 'ASP Water Resources'. A search bar and a Twitter icon are also present. The main navigation menu includes 'Home', 'About', and 'Trainings'. The 'Trainings' dropdown menu is open, listing categories: 'Fundamentals', 'Disasters', 'Health & Air Quality', 'Land', and 'Water Resources'. A featured training event is highlighted: 'Introduction to Remote Sensing of Harmful Algal Blooms', scheduled for Tuesdays, Sep 5-26, 2017, with a 'Register Now' button. The sidebar on the right contains a list of links: 'ARSET', 'Online Trainings', 'In-Person Trainings', 'Sign up for the Listserv' (highlighted with a mouse cursor), 'Tools Covered', 'Suggest a Training', 'Personnel', and 'Resources'. Below this is a section for 'Upcoming Training' with a sub-section for 'Water' and a link for 'Satellite Observations of Water Quality for...'. The background image is a satellite view of a coastal area with greenish water.



Esquema para la 2^{da} Semana

- Resumen General de SeaDAS
- Demostración: Análisis de Imágenes de MODIS con SeaDAS
 - Enfoque: La Bahía de Chesapeake
 - Descargar Imágenes de Landsat OLI para el Lago Victoria
- Ejercicio: Análisis de Imágenes de MODIS para el Lago Victoria Usando SeaDAS



Resumen General de SeaDAS <https://seadas.gsfc.nasa.gov/>

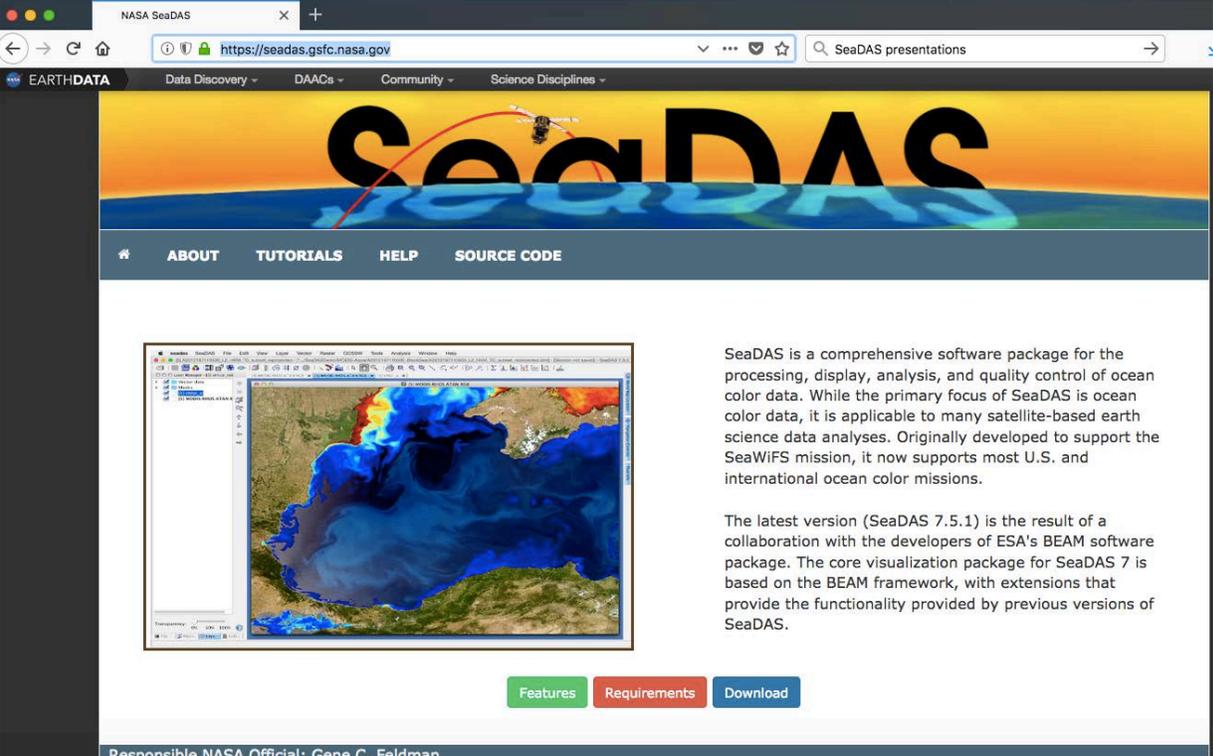
Reconocimiento: Daniel Knowles (Daniel.s.Knowles@nasa.gov), Ocean Biology Group

¿Qué es SeaDAS?

<https://seadas.gsfc.nasa.gov/>

SeaDAS es un software comprensivo para el procesamiento, visualización, análisis y control de calidad de datos del color oceánico

- La última versión es **SeaDAS 7.5.1**
- Fue desarrollado en colaboración con la ESA, en base al software BEAM
- Hay documentación en línea y tutoriales a descargar para poder trabajar con SeaDAS
- Está disponible en versión “línea de comando” y como Graphical User Interface



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[Features](#) [Requirements](#) [Download](#)

Responsible NASA Official: Gene C. Feldman



SeaDAS- Requisitos

<https://seadas.gsfc.nasa.gov/requirements/>

- Funciona en:
 - Linux
 - Mac OSX
 - Windows
- Código fuente (en C) disponible para su instalación

SeaDAS Configuration and Requirements

SeaDAS is currently available for Linux, Mac OS X, and Windows. The Windows version currently does not support the science data processing code. The [SeaDAS source code](#) is publicly available.

Minimum Suggested Hardware:

Platforms	Linux Intel Mac OS X
Memory	256 MB minimum, 1 GB+ suggested
Disk:	SeaDAS software package (Display only version): ~200 MB SeaDAS software package (with processing capabilities for all sensors): ~5GB 10GB of free space is also suggested for rudimentary data processing and storage.
Display:	15" Console or X-terminal with 20MB memory 1280x1024 resolution 24-bit X display plane depth 256 colors display minimum

Requirements:

The core visualization package of SeaDAS is written in Java. A minimum Java JRE of version 1.8 is required. A suitable JRE is packaged with the Windows and MacOSX distributions. Linux users will need to separately install a suitable JRE.

Operating Systems:	Linux: tested on Ubuntu (16.04 LTS) Intel Mac: OS X 10.12
Optional Compilers:	gcc/g++/gfortran (version 4.5 or higher) or Intel Compilers

Program	Version	Notes
Java	JRE 1.8 or above	Windows and MacOSX distributions come with a suitable JRE Linux users will need to separately install a suitable JRE
Bash	4.x	version 3.x should work, but not tested necessary only for science code
Python	2.6.5 or above	necessary only for science code not (yet) compatible with version 3 and above
Git	1.7.9 or above	necessary only for science code install/update option
cURL	7.x or above	necessary only for science code install/update option



SeaDAS- Funcionalidades

<https://seadas.gsfc.nasa.gov/features/>

Visualización

- Gestión de Capas Avanzada
- Mapeo, Re-proyección, Recorte
- Suelos, Agua, Perfiles Costeros
- Batimetría y Elevación
- Operaciones Matemáticas y Estadísticas
- Histogramas de Diagramación, Diagramas de Dispersión y Diagramas de Correlación
- Datos In Situ del SeaWiFS Bio-optical Archive and Storage System (SeaBASS)
 - <https://seabass.gsfc.nasa.gov/>

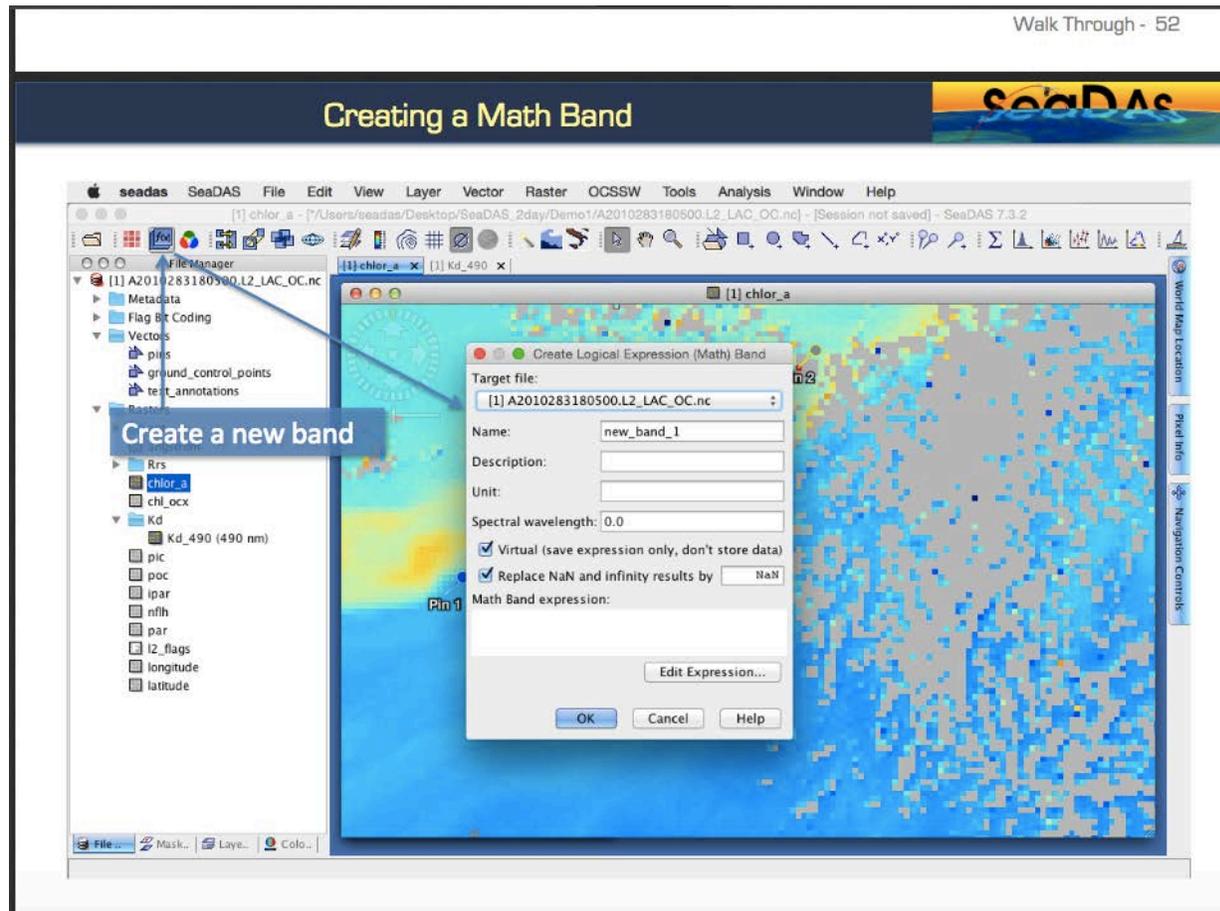


Image Credit: [An Exploratory Walk Through](#), SeaDAS Training Course



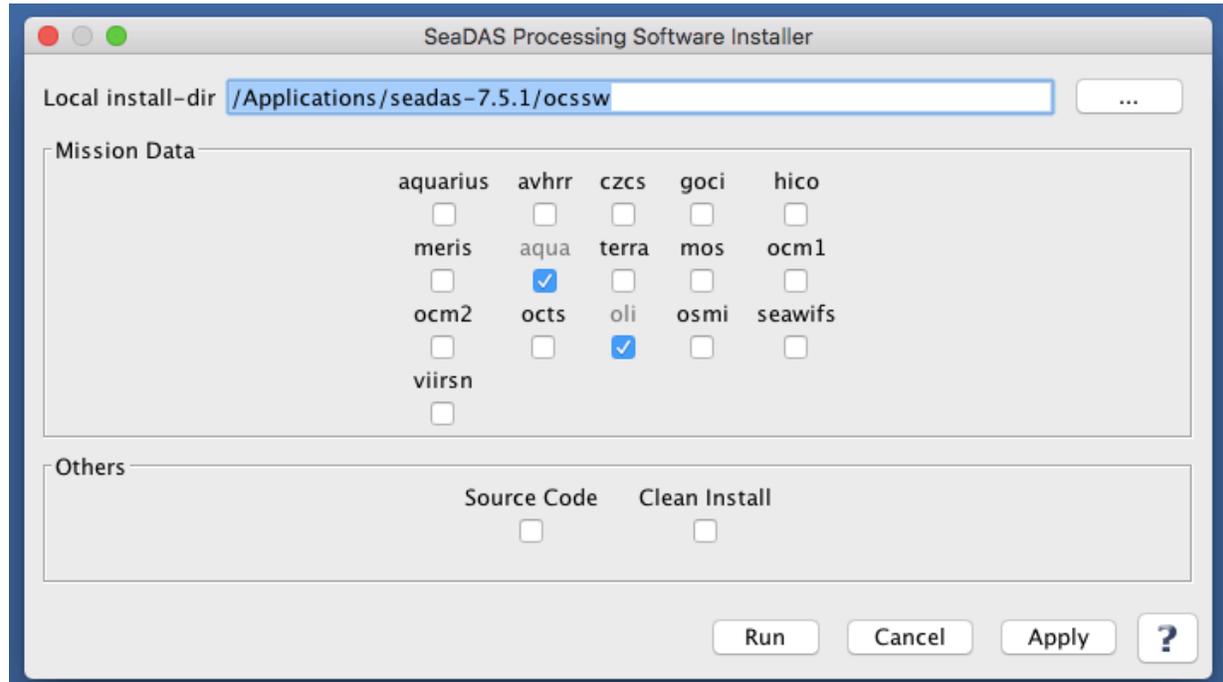
SeaDAS- Funcionalidades

<https://seadas.gsfc.nasa.gov/features/>

Procesamiento de Datos

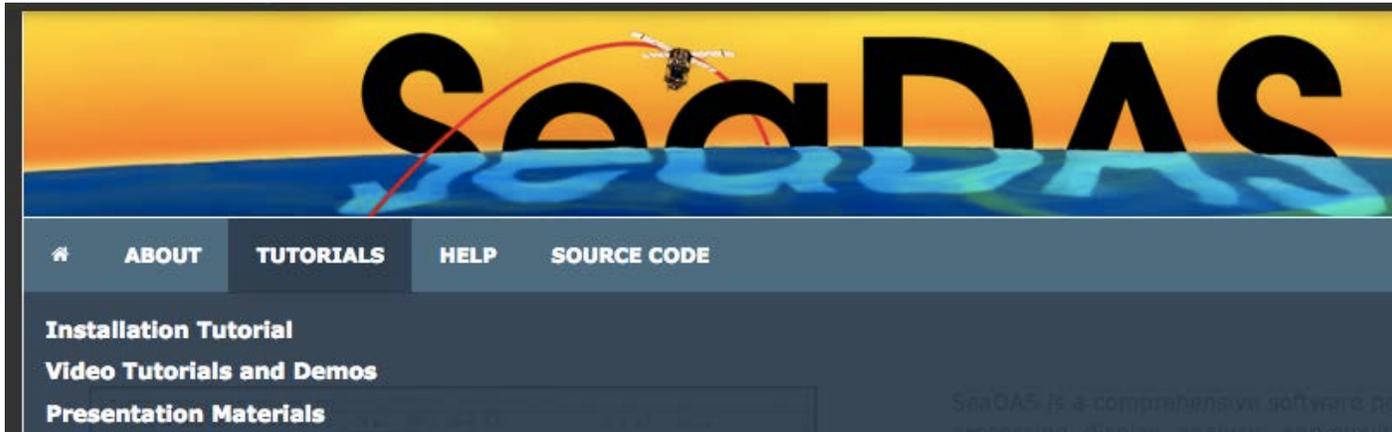
- Fue creado principalmente para la misión SeaWiFS; ahora se utiliza para procesar datos del color oceánico de MODIS y de otros sensores
- Funcionalidades incluyen:
 - procesamiento de datos MODIS Nivel-0 a Nivel-1
 - corrección atmosférica
 - conversión de datos Nivel-1 en Nivel-2
 - agrupación de datos Nivel-2 en Nivel-3
 - mapeo de datos Nivel-1, -2 y -3

Ocean Color Science Software (OCSSW)



SeaDAS- Tutoriales

<https://seadas.gsfc.nasa.gov/tutorials/>



Materials from SeaDAS Presentations and Workshops

- [SeaDAS Introduction](#)
- [SeaDAS Tools](#)
- [SeaDAS Walk Through](#)
- [Graph Processing Toolkit \(gpt\) Introduction](#)

Video Tutorials

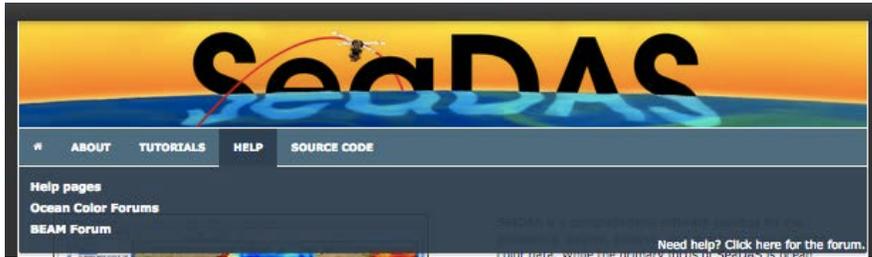
Several video tutorials have been prepared to help people learn to work with the SeaDAS software. These videos are listed below. We recommend viewing the first few in the order they are shown. The core videos are listed first first, followed by multi-tool case studies; everything below that appears in chronological order by release date.

	<p>Title: The Basics (Getting Started) Release Date: 2 April 2015 Duration: 9:31 Youtube: https://www.youtube.com/watch?v=rSTM1e7tfsg</p>
	<p>Title: Masks Release Date: 2 March 2015 Duration: 8:51 Youtube: https://www.youtube.com/watch?v=k16x3sDJFQQ</p>
	<p>Case Study Title: Sea Surface Temperature Anomalies Release Date: 21 October 2015 Duration: 39:08 Youtube: http://www.youtube.com/watch?v=5d1wCK7IDXE</p> <p>A case study tutorial video which demonstrates many tools and concepts in SeaDAS. The full video may be viewed or it may be viewed starting at a particular section by clicking any of the links below.</p> <ul style="list-style-type: none">00:00 - Introduction00:57 - Part 1: Getting the Data02:12 - Part 2: L3bin Processing03:54 - Part 3: L3mappgen Processing05:13 - Part 4: Adding Land Masks08:19 - Part 5: Merging the Files: Collocate11:06 - Part 6: Creating a Math Expression Band13:12 - Part 7: Window Tiling and Synchronization13:37 - Part 8: Masking with a Math Expression15:20 - Part 9: Masking with a Shapefile or Geometry17:07 - Part 10: Saving a Session18:45 - Part 11: Reprojecting19:54 - Part 12: Cropping21:00 - Part 13: Adding Gridlines22:18 - Part 14: Adding a Color Bar24:05 - Part 15: Exporting the Image26:16 - Part 16: Exporting the Color Bar27:03 - Part 17: Statistics28:48 - Part 18: Creating a Selectable Color Scheme30:36 - Part 19: Creating a Default Color Scheme33:15 - Part 20: Creating a Custom Color Bar38:38 - Outro: El Nino 2016
	<p>Title: Bathymetry & Elevation Release Date: 20 January 2015 Duration: 2:56 Youtube: http://www.youtube.com/watch?v=gZp7z1zU-eQ</p>
	<p>Title: A Synchronized View of Multiple Images with Color Bars Release Date: 2 August 2015 Duration: 6:58 Youtube: http://www.youtube.com/watch?v=E_XpGkVnN2w</p>



SeaDAS- Foro

https://oceancolor.gsfc.nasa.gov/forum/oceancolor/forum_show.pl

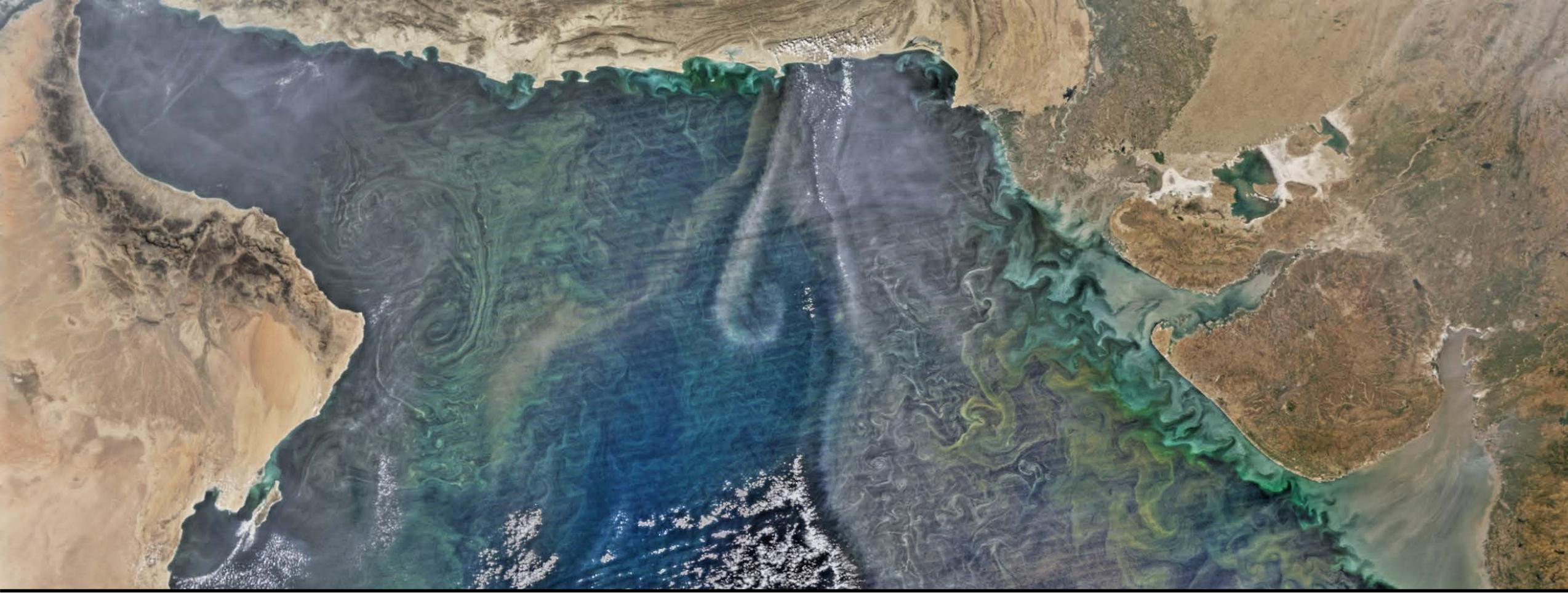


- Para Leer Preguntas Frecuentes
- Para Hacer Preguntas

A screenshot of the Ocean Color Forum website. The page title is 'Ocean Color Forum' and it shows 'Not logged in'. The navigation bar includes links for 'Forum', 'Ocean Color Home', 'Help', 'Search', and 'Login'. Below the navigation bar, there are links for 'Info', 'Feeds', and 'Mark Old'. The main content is a table listing various forum categories with their respective post counts and last post dates.

	Posts	Last Post
Announcements		
Ocean Color Announcements	151	2018-08-16 14:08
SeaDAS Announcements	91	2018-07-05 14:48
Frequently Asked Questions		
General Forum Information	8	2008-04-14 08:41
SeaDAS 7 FAQ	5	2017-03-28 12:41
SeaDAS 6 FAQ	38	2011-01-17 17:59
Archive FAQ for SeaDAS 6		
Data Products & Algorithms FAQ	33	2009-08-03 10:22
Data Access FAQ	29	2013-06-20 14:13
Products and Algorithms		
Satellite Data Products & Algorithms	6204	2018-08-15 11:51
Satellite Data Access	4045	2018-08-14 20:04
Field Data - SeaBASS	124	2018-04-23 05:44
SeaDAS		
SeaDAS 7 - General Questions	4676	2018-08-20 15:27
SeaDAS 6.x - General Questions	11914	2016-04-11 08:35
SeaDAS 6.x Virtual Appliance for Windows	386	2014-10-28 09:31

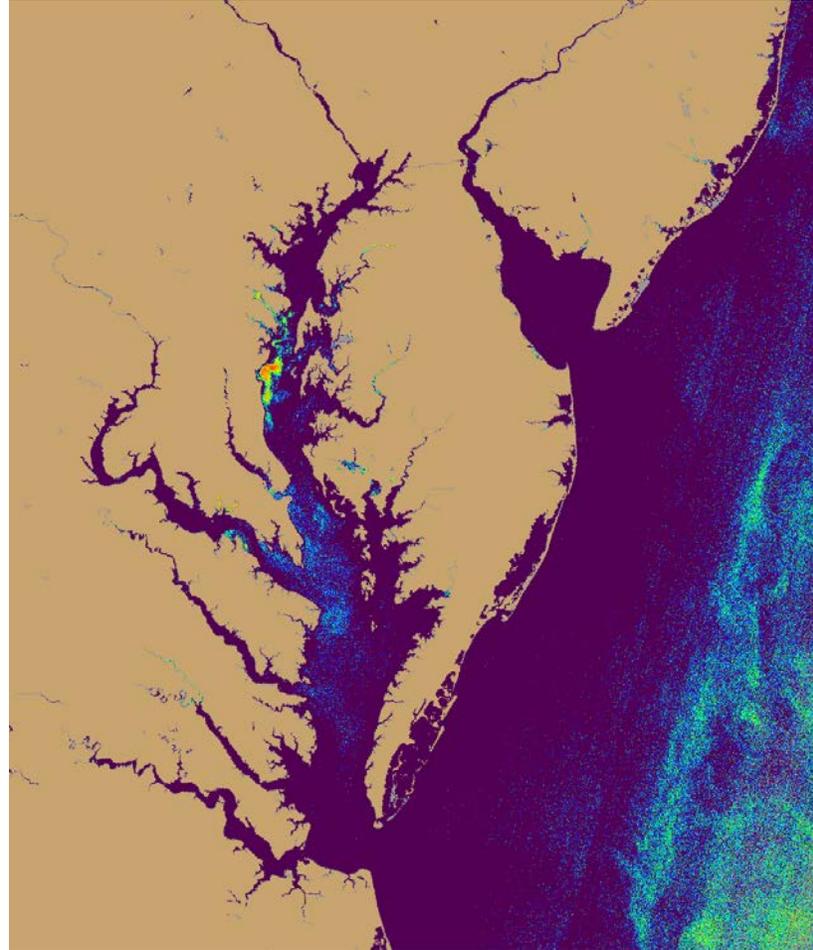




Demostración de SeaDAS

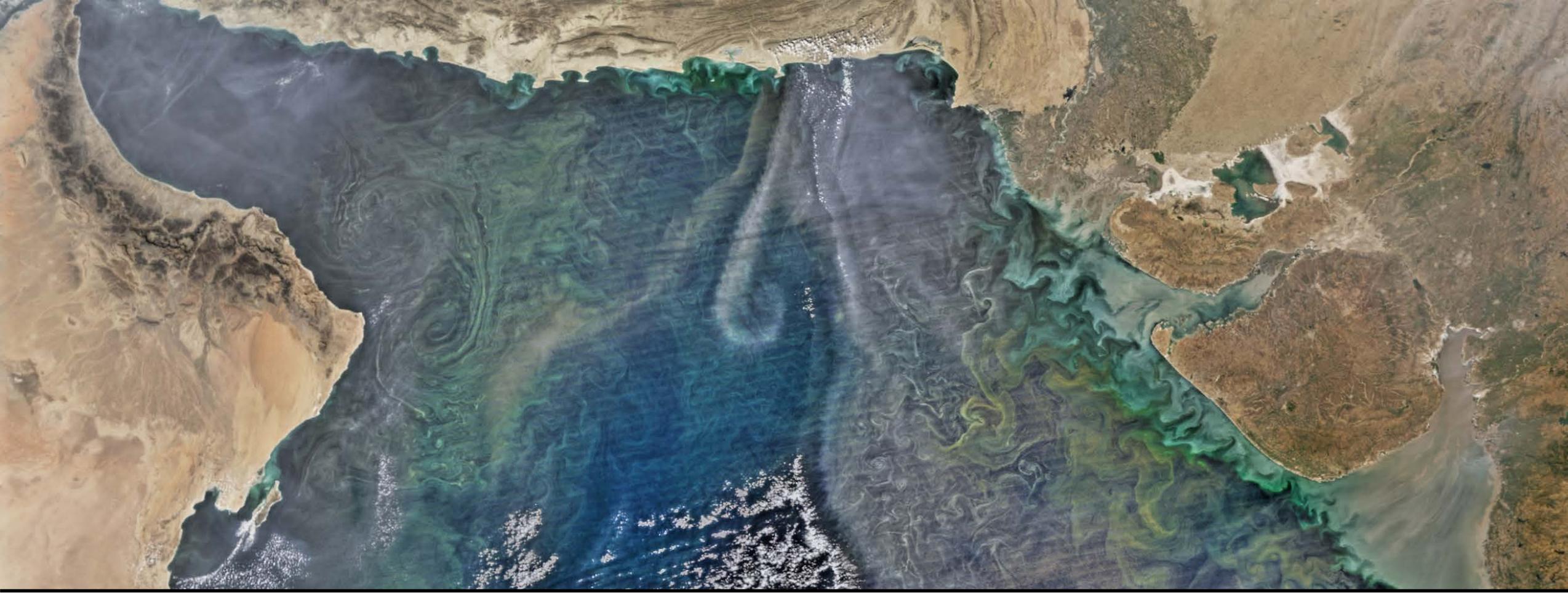
Estudio de Caso: Floración de Algas en la Bahía de Chesapeake - Primavera 2018

<http://eyesonthebay.dnr.maryland.gov/eyesonthebay/habs.cfm>

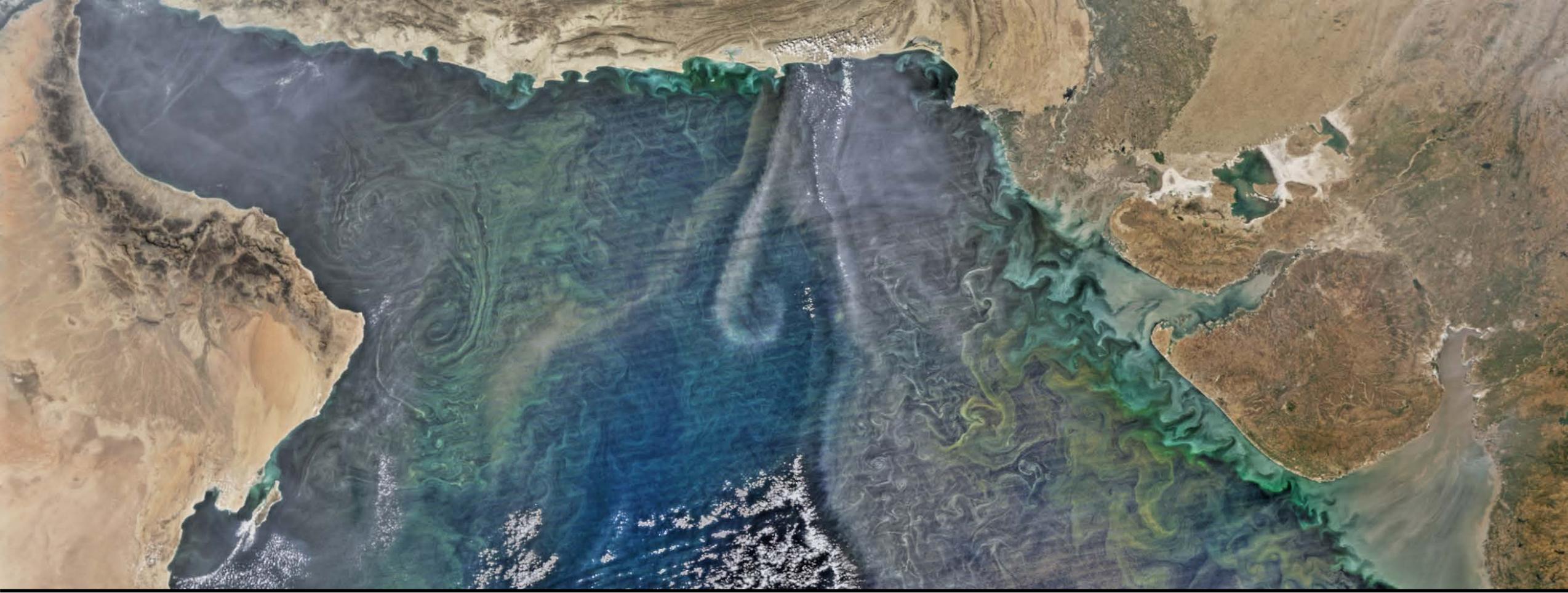


Detección por satélite de la floración de algas en la bahía de Chesapeake el 1º de mayo de 2018. Fuente: NOAA, Sentinel 3





Descargar Imágenes de Landsat para el
Lago Victoria



Ejercicio: Análisis de Imágenes de MODIS para el Lago Victoria Utilizando SeaDAS



Gracias