Example of SDP1 for a detected case of oil spill in the Mediterranean Sea using Sentinel-1 Rader data

NAFCOAST

NEWSLETTER 5

DECEMBER 2019

MAPPING OF OIL POLLUTION IN THE MEDITERRANEAN SEA NEAR THE ENTRANCE OF SUEZ CANAL USING SENTINEL-1 SAR IMAGES

Mohamed Ramadan1, Abdulaziz M. Abdulaziz2, Elham Ali3 and Islam Abou Elmagd1

1 National Authority for Remote Sensing and Space Sciences, Environment Development
2 Cairo University, Faculty of Engineering, Mining Petroleum and Metallurgical Engineering
3 Suez University, Faculty of Fish Resources, Department of Aquatic Environment.

Suez Canal, being a main international Maritime shipping route, experiences frequent events of oil pollution. Oil pollution is harming the marine ecosystem and creates pressure on the coastal socio-economic activities particularly at the area of study at Port-Saeid city. It is anticipated that the damage of oil spills is not only during the event but it extends for a long time and normally requires more efforts to remediate and recover the environment. The source of pollution is mainly from illegal discharges from vessels that represent nearly 45% of sea oil pollution worldwide. Unfortunately, most of these pollution events are small in size and not easily observed by environment agencies or local authorities. Early detection of these spills is the first and most important step for a successful clean-up operation.

This study focuses on the use of space-borne Synthetic Aperture Radar (SAR) images for oil spill detection and mapping to be an enabler for operational monitoring. The fortune of SAR sensors that can capture images day and night and not affected by weather conditions, and it has wide swath that covers large geographical areas for possible oil spills. Monitoring the North entrance of the Suez Canal at different dates from 2014 till 2019 using free Sentinel-1 SAR data resulted in the detection of several events of oil pollution. The largest event covered nearly 50 km2 of sea water. This study also illustrates different oil discrimination methods from SAR images to provide a high level of confidence in the detection results. The freely available Sentinel-1 data can be continuously used for monitoring and alarming pollution cases in the Canal area which is important for environmental agencies and governmental authorities. It is anticipated to create an operational model to detect and map oil pollution that supports decision makers and beneficiaries for coastal and marine socio-economic sustainability.

KEY WORDS: *Synthetic Aperture Radar (SAR) data, Oil spills, Image processing techniques, Suez Canal, SNAP*

NAFCOAST
PARTICIPATION IN GEO WEEK 2019

NAFCOAST was participated in the Group on Earth Observations (GEO Week 2019) in Canberra, Australia 4- 9, Nov. 2019.

More than 1500 representatives from 57 countries and 127 organizations, attended this event to create solutions, cooperate and address Global Earth Observation System, Data and information resources accessible.

The conference launched new investments and partnerships to boost the economic impact of Earth Observations.

PROJECT NEWS

....

The usage of EO data in managing the environment was an important focus discussed during the Geo Week .

....

NAFCOAST participated in GMES & Africa continental Workshop on Marine and Coastal from 25-28 Nov. 2019 in Cape Town, South Africa

....

A training workshop was organized for stack holders from Marsa Matrouh, Egypt on "Introduction to Geographic Information System (GIS) and Remote Sensing and their applications"

GMES & AFRICA CONTINENTAL WORKSHOP ON MARINE & COASTAL AREAS 2019, CAPE TOWN, SOUTH AFRICA

NAFCOAST was participated in the GMES and Africa continental workshop on Marine and Coastal Areas Services from 25th 28th , Nov. 2019 in CapeTown, South Africa.

GMES & Africa Workshop provides the opportunity for African National Thematic Focal Points and other key stakeholders (African Union Commission, European Commission; Regional Economic Communities, GOOS-Africa, UN-ESCO-IOC, etc) to discuss and contribute for a document reflecting the African vision for the Marine and Coastal Areas theme, as part of the GMES & Africa Action Plan

THE FUTURE OF EO LOOKS BRIGHTER IN GEO-WEEK 2019

NAFCOAST was introduced in the GEO Week 2019 through presentation in a side event and important intervention in the plenary.
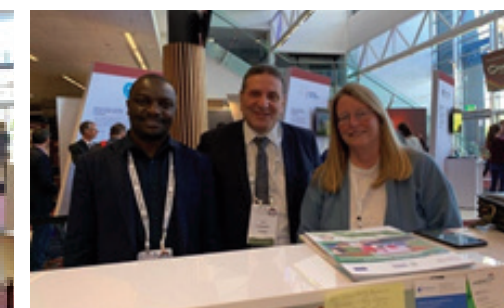
In our continued efforts to build partnerships, we had time of engagements with Google Earth Engine's Director Rebecca Moore, providing cloud solutions for data storage with Amazon services. In addition, we exchanged with other data providers to boost data access and mobility. The future of EO looks brighter

GIS TRAINING WORKSHOP IN MARSA MATROUH, EGYPT

NAFCOAST organized a training workshop on " Introduction to Geographic Information System (GIS) and Remote Sensing and their applications" In Marsa Matrouh, Egypt .from27th to 29th January 2020. 12 participants from the following organizations were attended the training workshop:

DESERT RESEARCH CENTER (DRC)	SUSTAINABLE DEVELOPMENT CENTER OF MATROUH RESOURCES (SDCMR)	MATROUH GOVERNORATE	THE AGRICULTURAL DIRECTORATE IN MATROUH