Committee on Earth Observation Satellites

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Joint CEOS / OGS session

Biarritz, France 1 December 2022

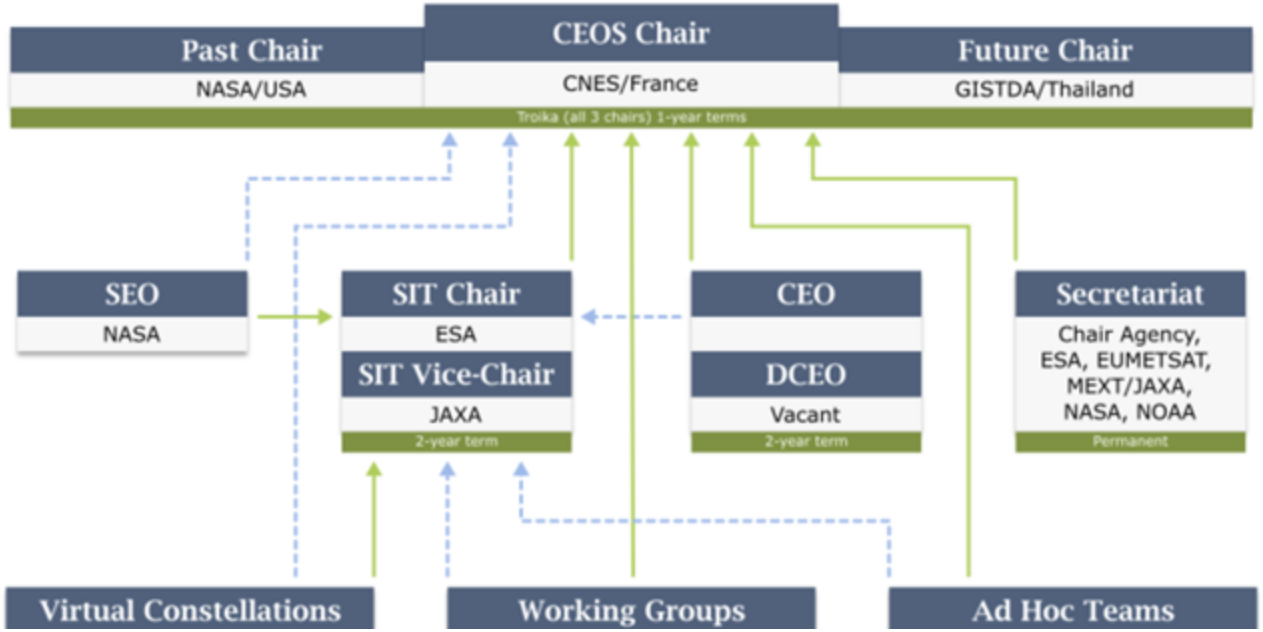
Committee on Earth Observation Satellites

Mission: CEOS ensures international coordination of civil space-based Earth observation programs and promotes exchange of data to optimize societal benefit and inform decision making for securing a prosperous and sustainable future for humankind.

Primary Objectives:

- To optimise the benefits of space-based Earth observation
- To serve as the focal point for international coordination of space-based Earth observation activities
- To encourage complementarity and compatibility

CEOS Organisation



THE CEOS DATABASE

CEOS WGISS Integrated Catalog (CWIC)

OPEN DATA CUBE

CEOS Cal/Val Portal

QA4EO

https://ceos.org

RadCalNet

@ceosdotorg

COVE

CEOS International Directory Network (IDN)

@socialceos

CEOS Training Calendar

CEOS Federated Earth Observation Gateway (FedEO)

EOTEC DEVNET

CEOS COVERAGE

CEOS Recovery Observatory

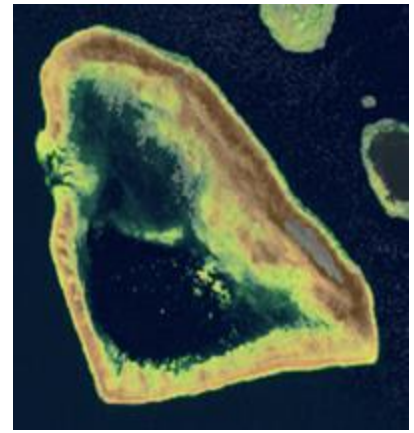
https://www.linkedin.com/groups/6724186/

Digital Earth Pacific (DEP)

- **CEOS** has been working with the **Pacific Community (SPC)** since 2020 to establish DEP, modeled after DE-Australia and DE-Africa.
- A **DEP Interim Steering Group** was formed in 2021 as an advisory body to guide user workshops, use-case studies, and develop a business case (March 2022). Members include SPC, **CEOS**, GEO, NOAA, GA, Univ of South Pacific, Fiji, RMI, Vanuatu and Tonga.
- The SPC team is building a prototype DEP infrastructure on the **Microsoft Planetary Computer** and developing user applications.
- **CEOS** has supported DEP through bi-weekly meetings with SPC, development of sample application notebooks for desired use-cases, participation in four country-based user workshops, and developing gap analyses for satellite data coverage.

Digital Earth PACIFIC

Pacific Community
Communauté du Pacifique



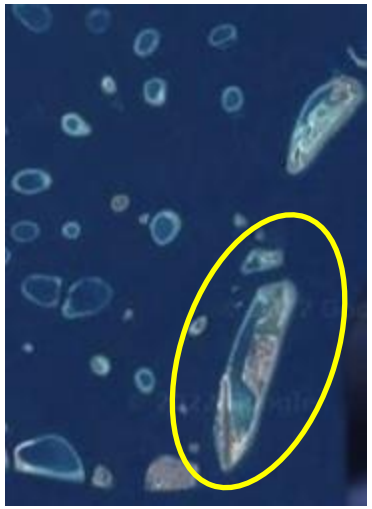
CEOS Data for the Pacific Islands

- The Pacific Islands are **very cloudy**, so optical data from Landsat and Sentinel-2 is limited.
- The SEO completed a cloud coverage analysis over Vanuatu, Tonga and RMI for 2020. Approximately **2/3 of the data was cloudy**.
- Sentinel-1 radar can penetrate clouds and is quite valuable for this region. Unfortunately, mission coverage is limited to the larger islands (PNG, Fiji, Vanuatu) and a few other islands.
- The failure of Sentinel-1B in Dec 2021 reduced coverage over the region, but ESA made some positive adjustments to the coverage plans.
- **Sentinel-1C** is planned for launch in **Q2 2023**.

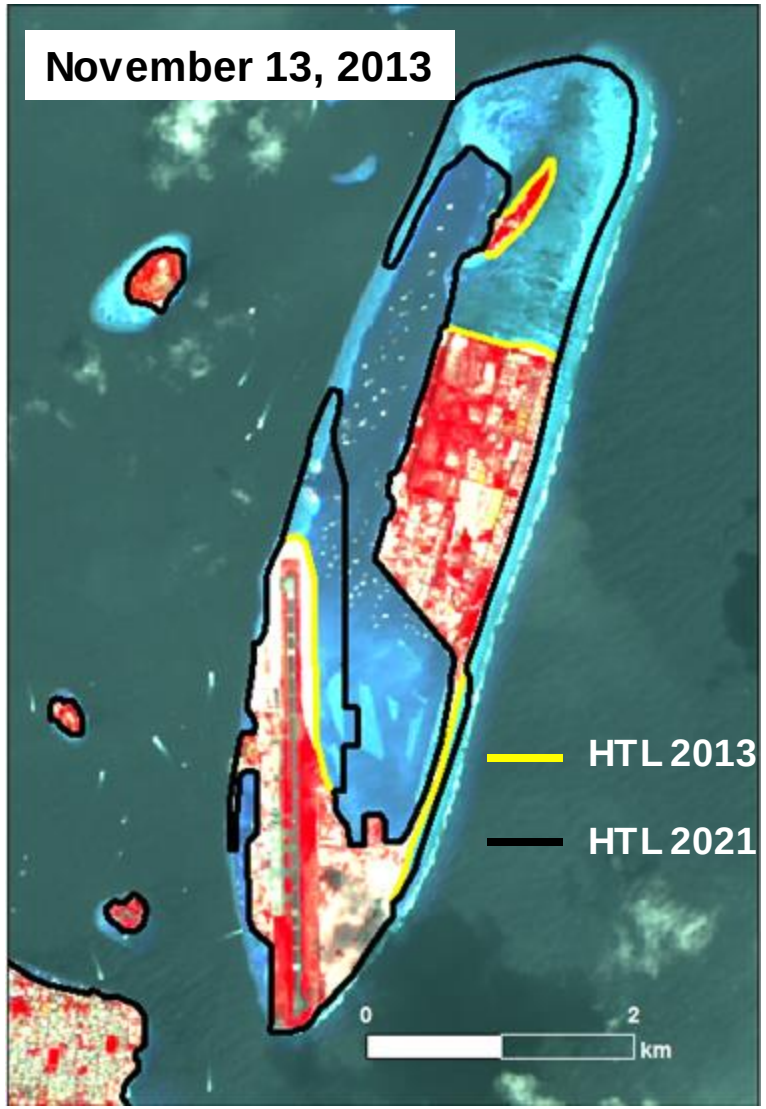
	2 Missions	2 Missions	2 Missions Pre Dec 2021	1 Mission 2022
Country	**Landsat**	**Sentinel-2**	**Sentinel-1**	**Sentinel-1**
American Samoa	Both	Both	1A	1A
Cook Islands	Both	Both	No	No
Fiji	Both	Both	Both	1A
French Polynesia	Both	Both	Both	1A
Guam	Both	Both	No	No
Kiribati	Both	Both	No	No
Marshall Islands	Both	Both	No	No
Micronesia	Both	Both	No	No
Nauru	Both	Both	No	No
New Caledonia	Both	Both	1B	1A
Niue	Both	Both	No	No
Northern Mariana Islands	Both	Both	No	No
Palau	Both	Both	1B	1A
Papua New Guinea	Both	Both	Both	1A
Pitcairn Islands	Both	Both	No	No
Solomon Islands	Both	Both	1B	1A
Samoa	Both	Both	1A	1A
Tokelau	Both	Both	No	No
Tonga	Both	Both	No	No
Tuvalu	Both	Both	No	No
Vanuatu	Both	Both	Both	1A
Wallis and Futuna	Both	Both	No	No

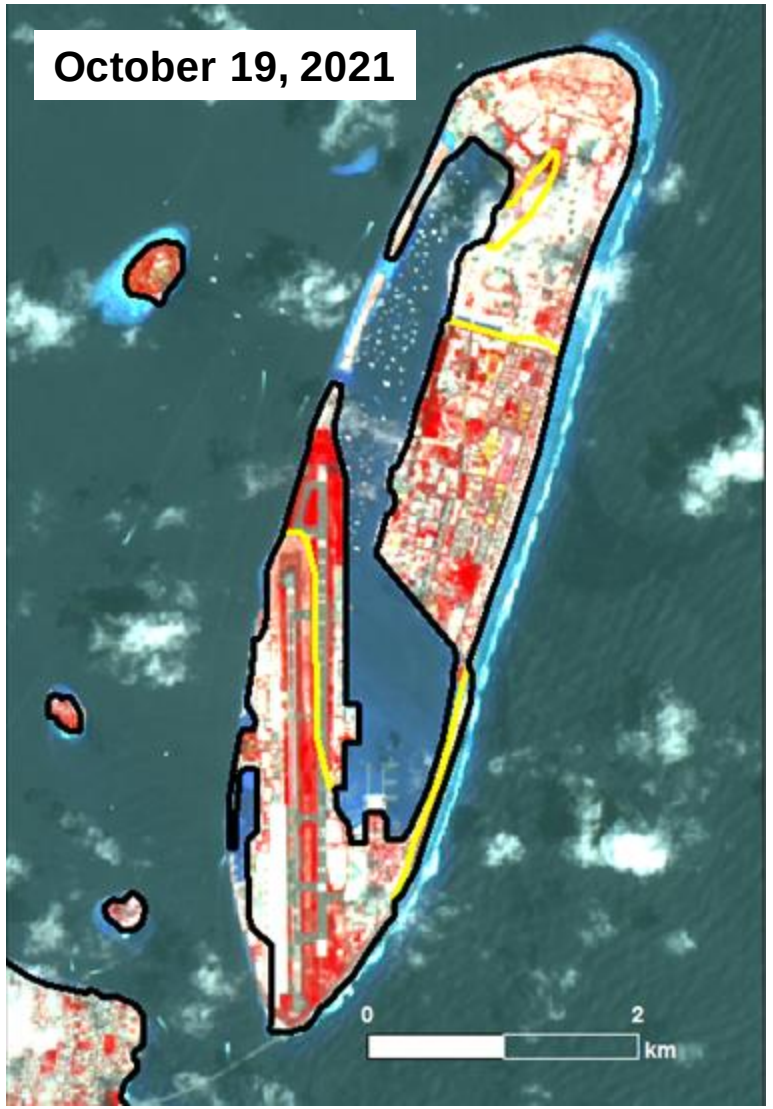
Coastline Change Applications

Hulhumale'
Maldives



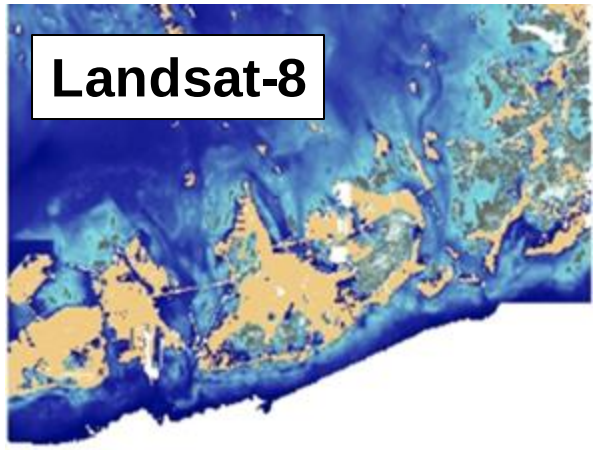
- Delineation of HTL and LTL
- Shoreline change detection (**accretion** and erosion)
- VIS and NIR spectral bands from Landsat
- Seasonal temporal frequency

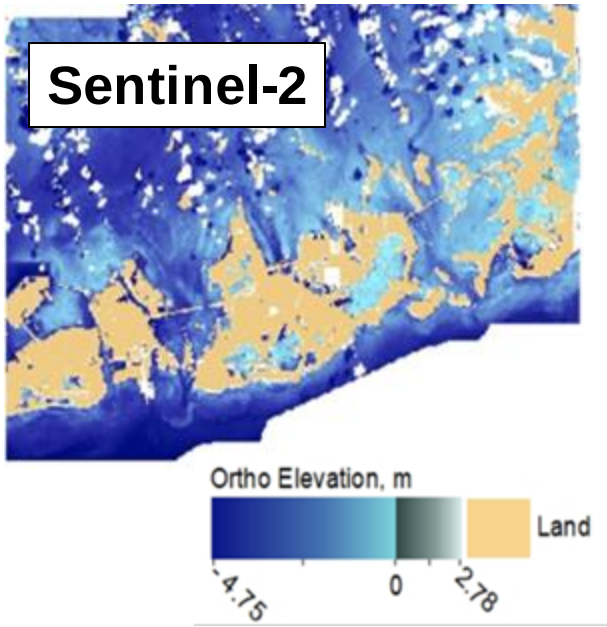


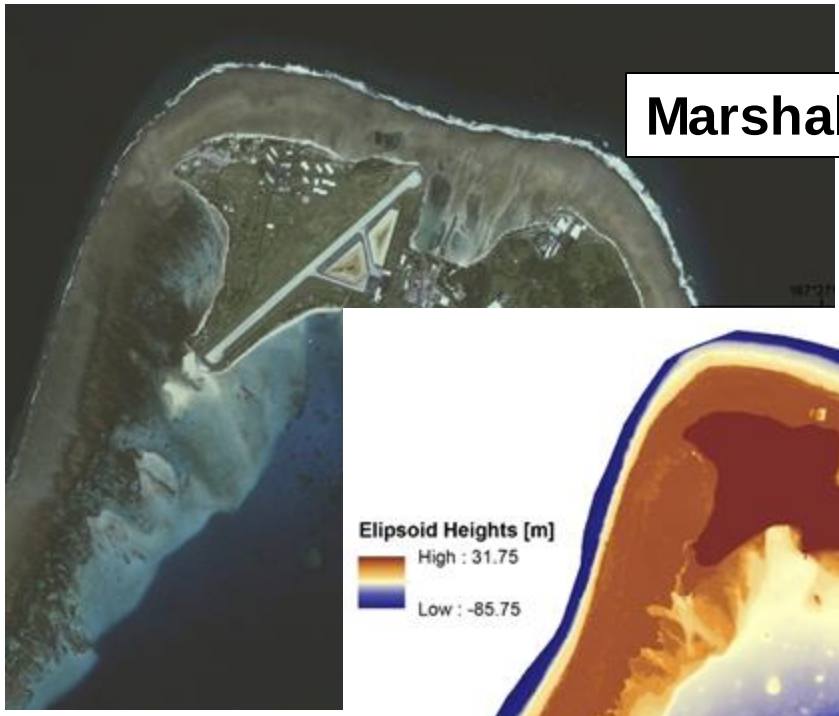


Bathymetry Applications

Florida Keys







How can CEOS help the Pacific?

- We have experience with several Digital Earth initiatives (Australia, Africa, Americas) and can help connect them to Digital Earth Pacific.
- We can support development of analysis-ready data (ARD) for water/ocean applications.
- We can support the development and use of coastline change and bathymetry applications.
- We can support the use of interoperable optical data (4 missions: Landsat and Sentinel-2) to get more frequent views to find non-cloudy pixels.
- We can support disaster response tasking requests for Sentinel-1 and NovaSAR-1