Capella's VHR SAR constellation for multi-temporal change detection

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Abstract

Capella Space is an aerospace and information services company that provides Earth observation analysis-ready data on demand. Capella is the first U.S. commercial Synthetic Aperture Radar (SAR) satellite constellation capable of providing hourly monitoring of the dynamic and changing conditions on the surface of the Earth. Next December 2019 Capella will launch its first commercial satellite. Following missions will be incrementally deployed to build a 36-satellite constellation, with three satellites each operating along 12 symmetrical polar orbits, progressively reducing time to revisit for a given point on the globe. This large constellation guarantees constellation redundancy, reliability, and responsiveness.

Capella is making space-based remote-sensing more persistent, through data acquisitions day or night and in all weather; accessible, through direct tasking, web ordering, and API integration; and more affordable through tiered pricing and service levels. Capella's Very High Resolution (VHR) SAR imagery, up to 0.5 meters, allows global satellite users to exploit multi-temporal series for unprecedented change detection capabilities, interferometric SAR techniques, precise target detection and tracking, bio-physical parameter estimation and mapping.

We present updates on our mission and goals to support the community focused on future EO applications. We focus on Capella's SAR capabilities, product specifications and data provisioning strategy to deliver high value data to both SAR experts (in form of Single Look Complex (SLC) and Geocoded and multi-looked (GEO) images) and new users who seek information streams to solve problems.

Moreover, we introduce how VHR SAR collected rapidly will represent a game changing factor for classical radar signal processing methodologies, such as object detection, change detection and interferometry. The high revisit detection of changes is going to enable several new applications in across market verticals including risk assessment for insurance, environmental monitoring, oil and gas and maritime monitoring.

Keywords - Analysis Ready Data (ARD)