NASA DIRECT READOUT CONFERENCE (NDRC) WEBINAR

September 4, 2019

MINUTES

Purpose/Objectives of the NDRC Webinar Series
At 11:00 a.m. Brad Quayle (USDA FS GTAC) convened the NASA Direct Readout Conference (NDRC) Webinar. He reviewed the purpose of the NDRC, activities to date, and objectives going forward. This webinar agenda featured Dr. Nickolay Krotkov's (NASA/GSFC) presentation, "Real-time Volcanic Cloud Products for Aviation Alerts."

Mr. Quayle's presentation, including webinar wrap-up slides, is available here:
https://directreadout.sci.gsfc.nasa.gov/links/rsd_eosdb/PDF/NDRC_Webinar_Series_20190904 - Quayle.pptx

The post-webinar survey (less than 3 minutes to complete) is available at:
https://www.surveymonkey.com/r/NDRC-September2019

Real-time Volcanic Cloud Products for Aviation Alerts (NASA)
Ingesting Direct Readout satellite volcanic cloud data is vital for improving reliability of volcanic ash forecasts by Volcanic Ash Advisory Centers (VAACs) and mitigating the effects of volcanic eruptions on aviation and the economy. In this presentation, Dr. Krotkov discussed the availability of an expedited distribution of satellite UV-based volcanic SO2 and Volcanic Ash (VA) data to decision support systems and end users. This effort is a result of a partnership between GINA/UAF, NASA Direct Readout Laboratory (DRL), the NASA OMI and OMPS ozone processing team, and the Finnish Meteorological Institute (FMI). The OMPSnadir software package is integral to the system and processes direct broadcast SNPP/OMPS data to produce volcanic SO2 and ash data in real time. The system runs operationally within the DRL's International Planetary Observation Processing Package (IPOPP) environment at both GINA and FMI. Together, these two ground stations provide nearly complete coverage of the Arctic, while DRL delivers the IPOPP applications framework that is also available to the broader low latency data user community worldwide. Ongoing system enhancement efforts include extending real-time VA and SO2 monitoring to night-time periods based on Thermal Infrared (TIR) data, and improvement of the accuracy of UV-based SO2 and VA retrievals.

Questions and Comments for Dr. Krotkov:

Q: You noted how your ash cloud data is integrated with the Alaska Volcano Observatory. Are there potential synergies or advantages by integrating with DSS applications that identify volcanic activity (e.g., MODVOLC that provides tuned MODIS thermal anomaly data to detect volcanic activity)? Is there value leveraging that data/information to focus/closely monitor volcanoes that are increasing in activity?
A: Yes. Integration of the thermal anomalies data is helpful and will be investigated more. Note that detected thermal anomalies may not be indicative of an eruption, but also indicate the presence of lava lakes and lava flows which may not always have significant SO2 emissions that are present in an explosive eruption. Also surface deformation can be detected from space by Synthetic Aperture Radar (SAR); combining surface deformation, thermal anomaly and degassing data helps to gain better insight into the volcanic process.

Q: Can heights of detected ash clouds be estimated?
A: Yes. Ash cloud height estimates are available. Estimated heights for SO2 plumes are not.

Q: What are the most important data and products for aviation avoidance?
A: There are operational systems on geostationary imagers like the Advanced Baseline Imager (ABI) on GOES 16 and 17, using the same IR channels as VIIRS. There is no operational SO2 product, so the Volcanic Ash Advisory Centers (VAAC) use volcanic ash products from ABI to determine volcanic ash column mass, height and particle sizes. However, geostationary imagers do have limits for polar regions.

Q: What is the most important product for aviation avoidance that we do not have, but that you would like to see used operationally?
A: The SO2 product would be a nice complement to the operational volcanic ash product. SO2 stays in the air longer, is easy to detect because of zero background, and it shows the full extent of volcanic cloud, not just where the ash is located. Both products complement each other, and would really help operational users.

Q: Will the VIIRS/MODIS SO2 plume detection capability be expanded to global coverage, or is it available for polar regions only?
A: Yes. It is available globally. Efforts with NASA JPL are ongoing to support global coverage.

Q: Can the products presented today be produced using the OMPSNADIR SPA running from within the DRL's IPOPP framework?
A: Yes.

Q: Will a recording of this presentation be provided?
A: No. We anticipate providing recordings of presentations and audio content for future NDRC webinars. Currently, we do provide a copy of the slides presented as well as general notes collected during the webinar. This material is published on the DRL Web Portal, and participants will be notified via email as soon as it is available.

Comment: Thanks for sharing the differences in resolution between NOAA-20 OMPS and SNPP OMPS. I did not realize there was such a difference.

Dr. Krotkov's presentation is available here:
https://directreadout.sci.gsfc.nasa.gov/links/rsd_eosdb/PDF/WebinarDRLsep2019v3.pptx

Meeting Wrap-up
Mr. Quayle thanked Dr. Krotkov for his presentation, as well as the DRL for providing logistics support. Mr. Quayle stressed the value of participant feedback as we evaluate future software technologies and algorithms, and prioritize resources accordingly to meet the needs of the global user community. He invited participants to submit feedback and

additional suggestions for future webinar topics to him directly via email, and encouraged participants to complete a post-webinar survey (less than 3 minutes to complete) available at: https://www.surveymonkey.com/r/NDRC-September2019. Mr. Quayle adjourned the webinar at 12:15 p.m.

Next Webinar
The next webinar is planned for December 4, 2019. Additional details will be provided via the Direct Broadcast Users email alias.