

ASF Data Recipes

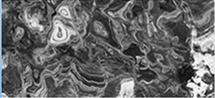
Data Recipes Help Users Accomplish Their Research Goals

By Jeanne Laurencelle, ASF

The results of the 2016 American Customer Satisfaction Index Survey were clear – users want more data recipes to help them accomplish their research goals. In 2017 the ASF staff went to work, gathering information from multiple sources, including Dr. Franz Meyer’s university-level Synthetic Aperture Radar (SAR) course, the ASF Advanced Product Development group, and European Space Agency tutorials. ASF wrote a collection of recipes that allow SAR users of many skill levels to accomplish tasks such as flood mapping, change detection, land-use classification, Interferometric SAR, and phase unwrapping. Users can also access recipes for viewing, geocoding, and terrain-correcting data.

How to Use Synthetic Aperture Radar (SAR) Data

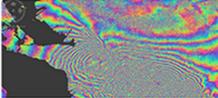
● Easier ■ Intermediate ◆ Advanced ◆◆ More Advanced



Geocode Sentinel-1 Data

Use GDAL to geocode Sentinel-1 GRD data for GIS analysis.

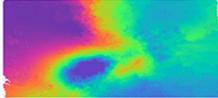
■ Windows, OS X



Generate InSAR with Sentinel-1 Toolbox

Use European Space Agency (ESA) Sentinel toolbox to generate an interferogram.

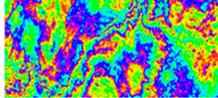
■ Windows, OS X



InSAR Phase Unwrapping

Use Snaphu to unwrap an interferogram to generate a deformation map.

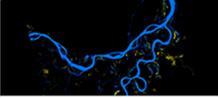
■ Linux



InSAR with GMT5SAR

Use free GMT5SAR software to create and unwrap an interferogram.

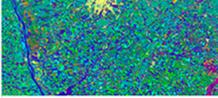
■ Ubuntu, Python script
◆◆ Software Installation



Map inundation with L-band SAR

Generate a map and animation with RTC ALOS PALSAR data.

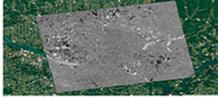
◆ Windows, OS X, Español



Land Use RGB with Sentinel-1 Data

Use the S1TBX to create a multi-temporal color composite.

◆ Windows, OS X



Environmental Change Detection

Use SAR data for environmental monitoring and emergency response.

● Windows, OS X



Three ways to radiometrically terrain correct Sentinel-1 data

● S1TBX: Windows, OS X, Unix
■ Script: Windows, OS X, Unix
◆ GAMMA & scripts: Linux

Each recipe is rated for level of difficulty using ski slope classification symbols. The instructions are written to be clear to even the newest user. By request, most of the recipes use free software such as QGIS, S1TBX, MapReady, and GMT5SAR. ASF also offers recipe versions that use ArcGIS and GAMMA, which some may prefer.

Tested extensively for clarity of language, we think these recipes work well! We would love to hear if you agree with us or how we can make them better if you do not. With the goal of reducing the amount of time spent figuring out the data and increasing the time working on science, ASF is making SAR data accessible to a wide variety of users.

ASF's most recent data recipe (GMT5SAR in the Cloud) uses cloud processing. Cloud processing allows users to use software without installing it on their computer. For example, installing GMT5SAR is rated as "most difficult" in our data recipes. ASF data recipe users can access its power in the cloud simply by feeding it two granules and waiting for their InSAR products. In addition, cloud data recipes allow users to select compute power of their choice, save processing time and free up their local machine. Look for more cloud-based recipes in 2018.

Requests for future data recipes are welcome at uso@asf.alaska.edu(mailto:uso@asf.alaska.edu). Data recipes can be found on the ASF website at <https://www.asf.alaska.edu/asf-tutorials/data-recipes/>(<https://www.asf.alaska.edu/asf-tutorials/data-recipes/>) .



About Us

The Alaska Satellite Facility downlinks, processes, archives, and distributes remote-sensing data to scientific users around the world. ASF's mission is to make remote-sensing data accessible.

Alaska Satellite Facility

 2156 Koyukuk Drive
Fairbanks, AK 99775

 (907) 474-5041

 [Contact Us](#)

*UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual:
www.alaska.edu/nondiscrimination(<http://www.alaska.edu/nondiscrimination>) .*