Enabling the automatic DInSAR processing for PSI since SNAP version 6.0 with snap2stamps package

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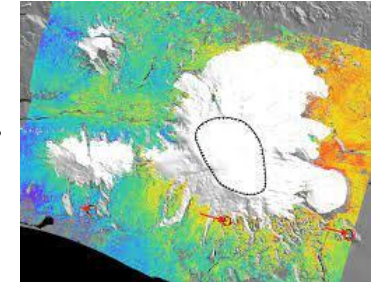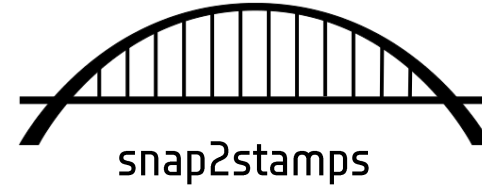Geoscience for a sustainable Earth
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Outline

- snap2stamps
- numbers
- Building on top of snap2stamps
- Using snap2stamps
- Next release

snap2stamps

- *snap2stamps* is a **command line open-source** package python-based (multi-platform) that enables the automatic single master DInSAR processing compatible with the Stanford Method of PSI (StaMPS)

- **Created in July 2018** in close collaboration with SNAP developer team and Prof. Andy Hooper to support a user community that was not able to use Sentinel-1 data for time series InSAR analysis (i.e. PSI) with open-source tools.

- Sentinel-1A was launched on April 2014, but until the release of the *snap2stamps* package, **there was no open-source tools** allowing users to use that data for PSI

numbers

- Release v.1.0.1 available in
  - Zenodo with almost **1700 downloads**
  - Github more than **45 forks** and uncountable downloads
- snap2stamps google search results in more than **2400 entries** (publications, papers, manuals)
- STEP FORUM entries based on snap2stamps or related:
  - Direct entry with more than 20k views and 860 replies
  - Total views on snap2stamps related threads over 180k views
- Snap2stamps also influenced in the SNAP downloads since its release, helping to reach the current almost **1M downloads**

Building on top of on snap2stamps

- **SBAS_snap2stamps**, it is another tool that appeared on the STEP FORUM that allows Small Baselines technique to be used together with SNAP that uses modified *snap2stamps* scripts.

- The Research and User Support (RUS) provided in November 2020 a **dedicated training** on the usage o *snap2stamps* for PSI data processing. Another training sessions using *snap2stamps* were given also in large conferences such as IGARSS2021

- Other several tools and packages were also released complementing *snap2stamps*, for example dockerizing it.

- *snap2stamps* promotes open-science and collaboration between users

using snap2stamps (I/II)

- As snap2stamps was created based on the xml information for the Sentinel-1 interferometric operators of SNAP version 6.0, the release 1.0.1 does encounter issues when trying to user higher versions of SNAP.

- However, it has been very easy for users to adapt the xml by themselves or after asking on the STEP FORUM how to do it, which actually helped them to understand how they can adapt the scripts and also gain deeper knowledge on the SNAP operators on GPT mode

using snap2stamps (II/II)

- Many users asked for help on the **STEP FORUM** encountered issues using snap2stamps for 2 main reasons:
  - Lack of knowledge on the SAR data processing and interpretation
  - They had not followed the user manual or respected the package dependencies

Solutions

One solution is to provide a fully automatic workflow where the user do not need to download SAR data, caring about processing resources and selecting proper parameters:

A new service called **SNAPPING**, already available in the **GeoHazards TEP** will be the best solution for many users that have difficulties to handle large amount of data download and processing.

The other solution will be the **new release of snap2stamps**, that will support higher versions of python 3.X and SNAP, more adequate to independent users.

The estimated release date is **1st July 2022** and it will be put available using the same channels as the previous version (i.e zenodo and github)

- *More information about the SNAPPING service at:*
  - *Terradue booth on the Exhibitor Area (ellip platform)*
  - *2 Posters on Friday session 13:12 and 13:26 with ID: 66577 on SNAPPING service applications)& ID 66574 wide area processing on Nile Delta*

Conclusions

snap2stamps is a success story where few users developed a tool beneficial for the user community

The **STEP FORUM** enables a collaborative platform where users are continuously helping each other, bursting, for example, the scientific production based on PSI analysis of Sentinel-1 data among many others.

snap2stamps is just an example of how applications can be enabled by building on top of SNAP the missing pieces and putting them available to everyone.

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