Introduction to Using WOVOdat *(version February 2014)*

WOVOdat is a web-accessible database of worldwide historical volcanic unrest. Open user access which is launched during 2013 IAVCEI Kagoshima meeting allow registered user to navigate into WOVOdat website (***www.wovodat.org***). Through this website, users will be able to obtain general information about WOVOdat and find 4 first-level menu selections:

- ***Documentation***: Users may consult and download documentations (user manual, SQL schema, XML format, table formats). A WOVOdat installable standalone package is available for observatories that want to adapt WOVOdat for their own data management.
- ***Volcano (data)***: Registered users will be able to interactively query the database and view volcano monitoring data set. Visualization tools in WOVOdat presently enable comparisons of processed monitoring data, e.g., earthquake hypocenters, displacements, and gas flux time series from different episodes of unrest from a single volcano, or from unrest of different but analogous volcanoes. The data set is still in an early stage of population, but contains enough data to show users its potential.
- ***Submit Data***: Currently we offer 3 options for users to contribute data: (a) free format or original observatory format, (b) WOVOdat CSV standard format, and (c) Customary/known CSV format. Data can also be contributed using an online form and uploaded into SQL database following WOVOdat XML standard format.
- ***Contact***: We invite scientists from volcano observatories, universities, and research institutions to participate in the growing of WOVOdat database by sharing their data and their expertise in developing visualization tools. The email address for the WOVOdat developer team is given under Contact.

1. Creating an account:

Fill in registration form through http://www.wovodat.org/populate/regist_form.php

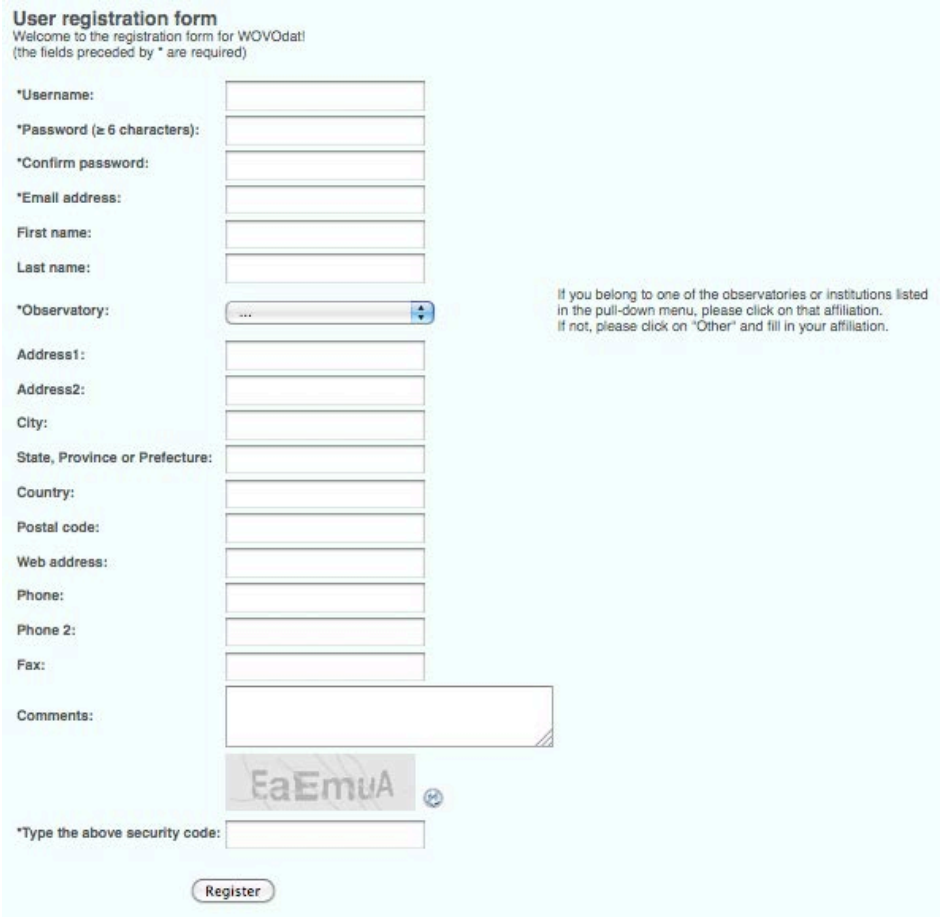


Figure 1. WOVOdat user registration form

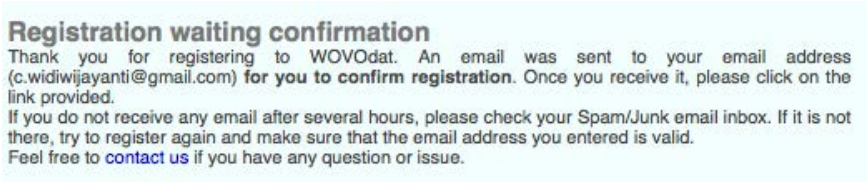


Figure 2. Registration process

When the filled form is successfully submitted to the system, an email will be sent to registered email address. To confirm the registration, user will required clicking the link provided in the email.

Figure 3. Registration confirmation

2. **Documentation:** *http://www.wovodat.org/doc/*
Users may consult and download documentations (user manual, SQL schema, XML format, table formats, etc.).

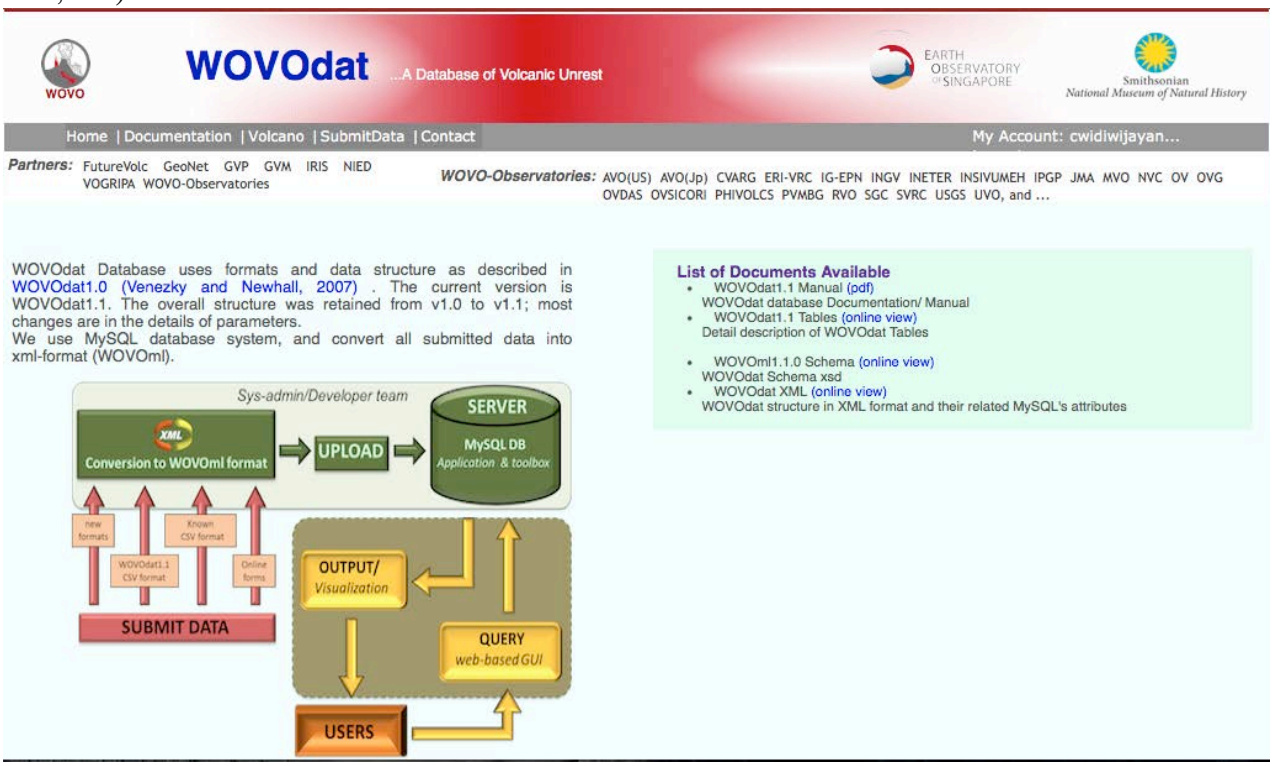


Figure 4. *WOVOdat documentations available for online view or download through our website.*

A WOVOdat installable standalone package is available for observatories that want to adapt WOVOdat for their own data management (*http://www.wovodat.org/installing/download_installable.php*)

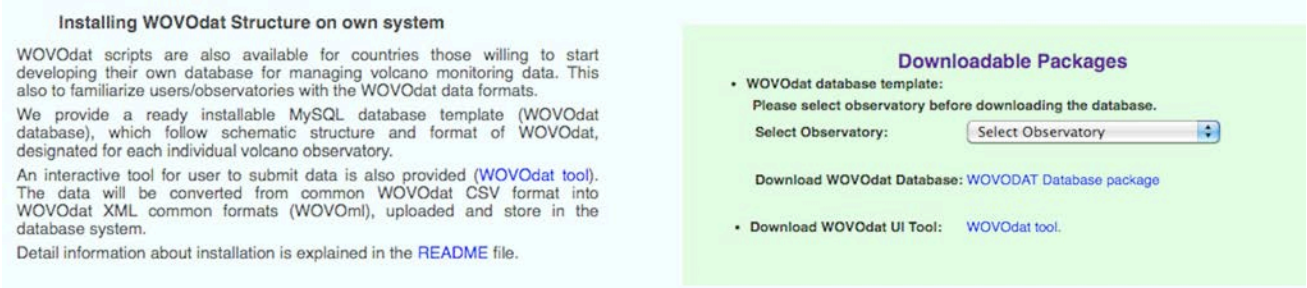


Figure 5. *WOVOdat package is downloadable, together with UI tools and installation README file.*

3. **Volcano(data):** *http://www.wovodat.org/precursor/index_unrest_devel_v5.php*

Registered users will be able to interactively query the database and view volcano monitoring dataset. Visualization tools in WOVOdat presently enable comparisons of processed monitoring data, e.g., earthquake hypocenters, displacements, and gas flux time series from different episodes of unrest from a single volcano, or from unrest of 2 different but analogous volcanoes. Nearly all data in WOVOdat are time-stamped and georeferenced, so that they can be studied in both space and time.
The data set is still in an early stage of population, but contains enough data to show users its potential.

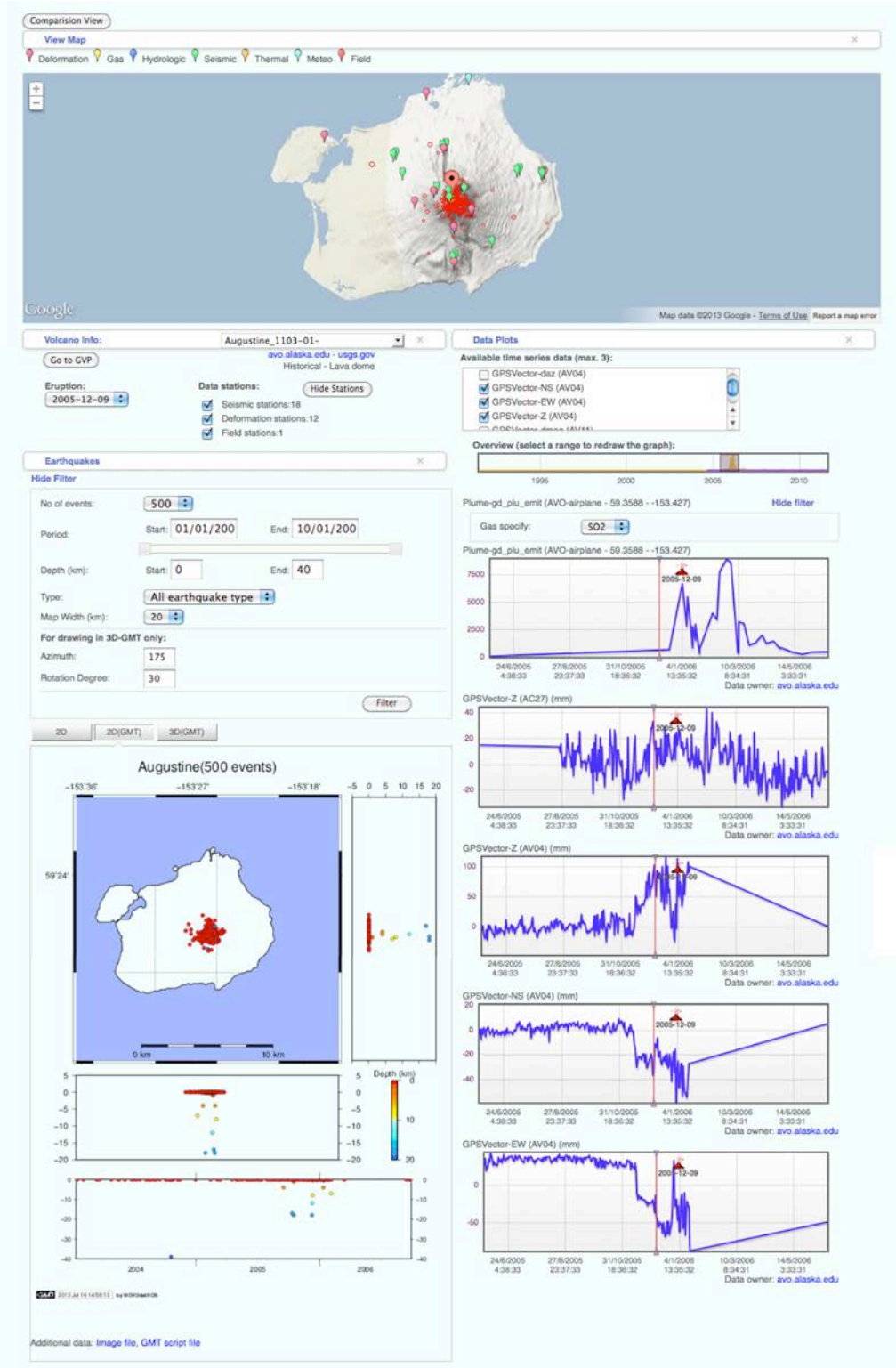


Figure 3. *Example of visualization: precursory data of Augustine eruption 5 Dec 2005.*

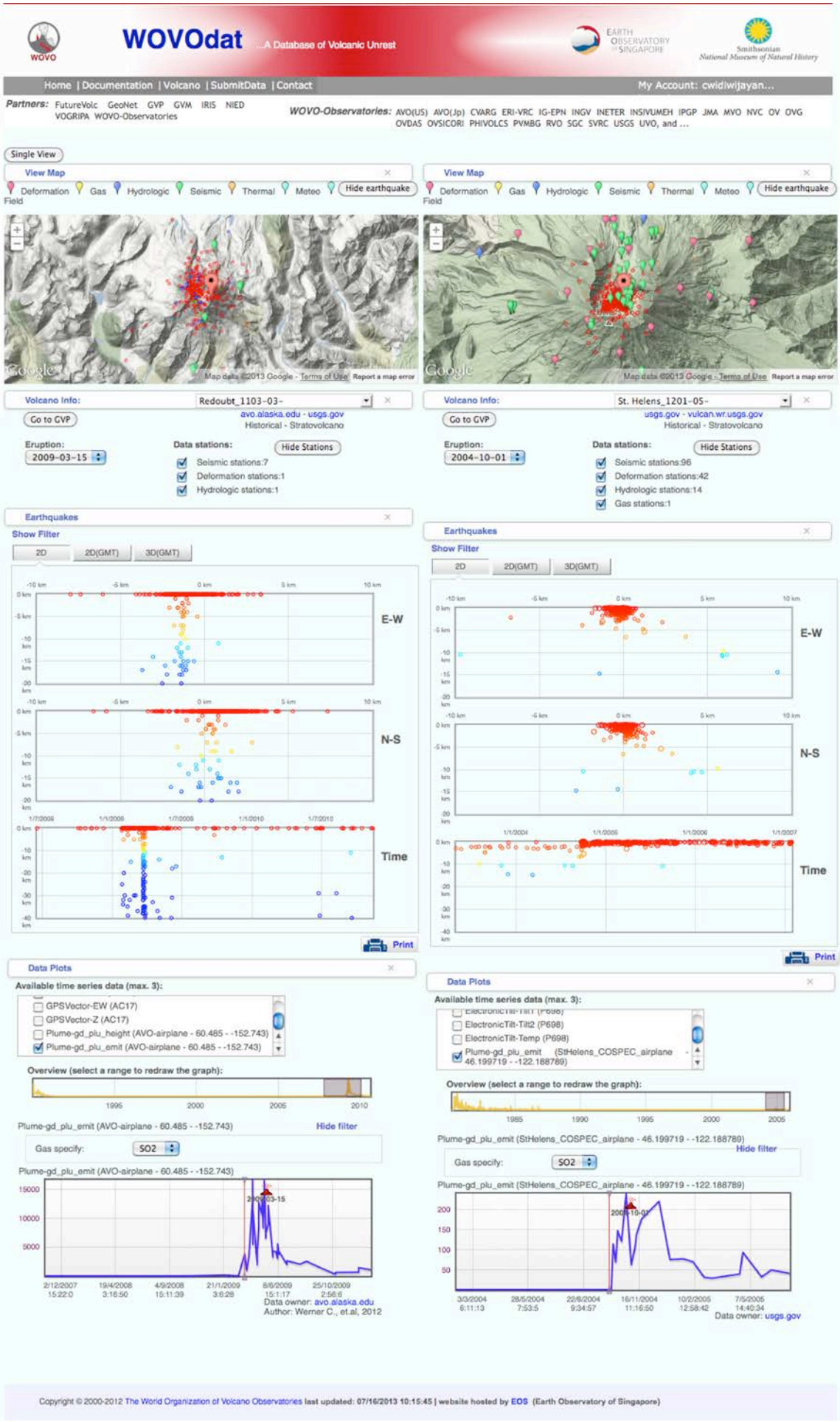


Figure 4. *Data comparison between Redoubt (2009) and St. Helens (2004) eruptions.*

4. **SubmitData:** *http://www.wovodat.org/populate/home_populate.php*

Currently we offer 3 options for users to contribute data:

(a) free format or original observatory format,
(b) WOVOdat CSV standard format, and
(c) Customary/known CSV format.

Data can also be contributed using an online form and uploaded into SQL database following WOVOdat XML standard format.

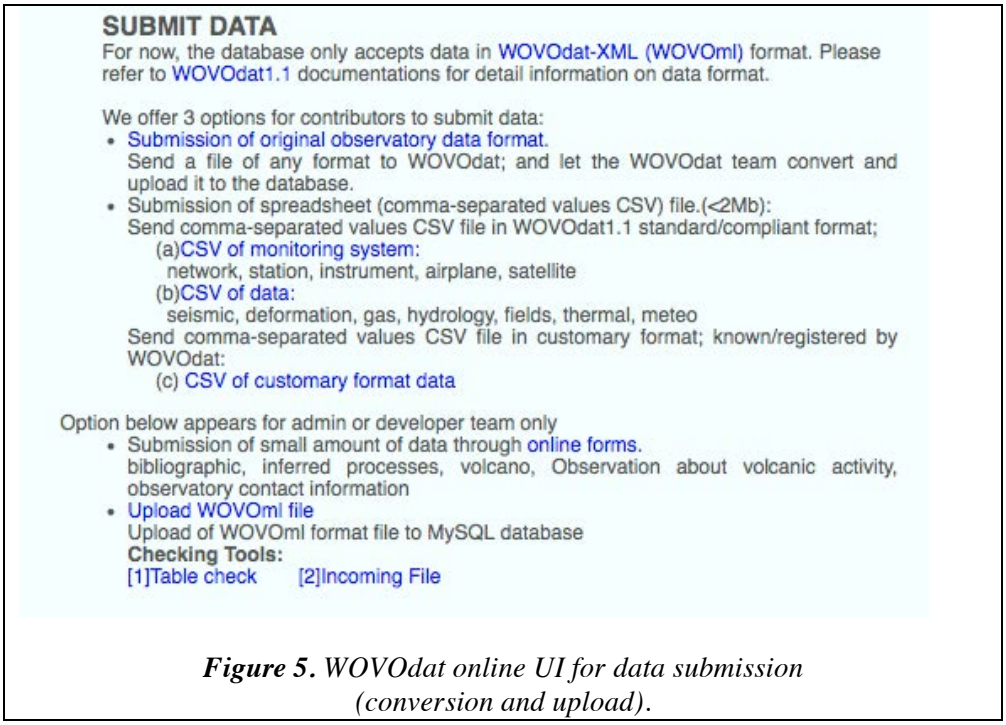
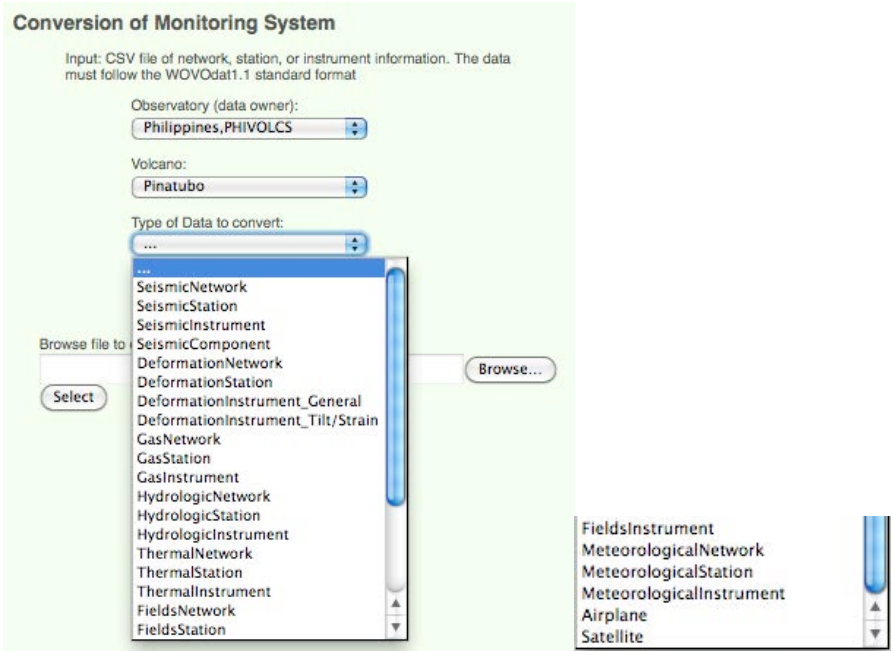


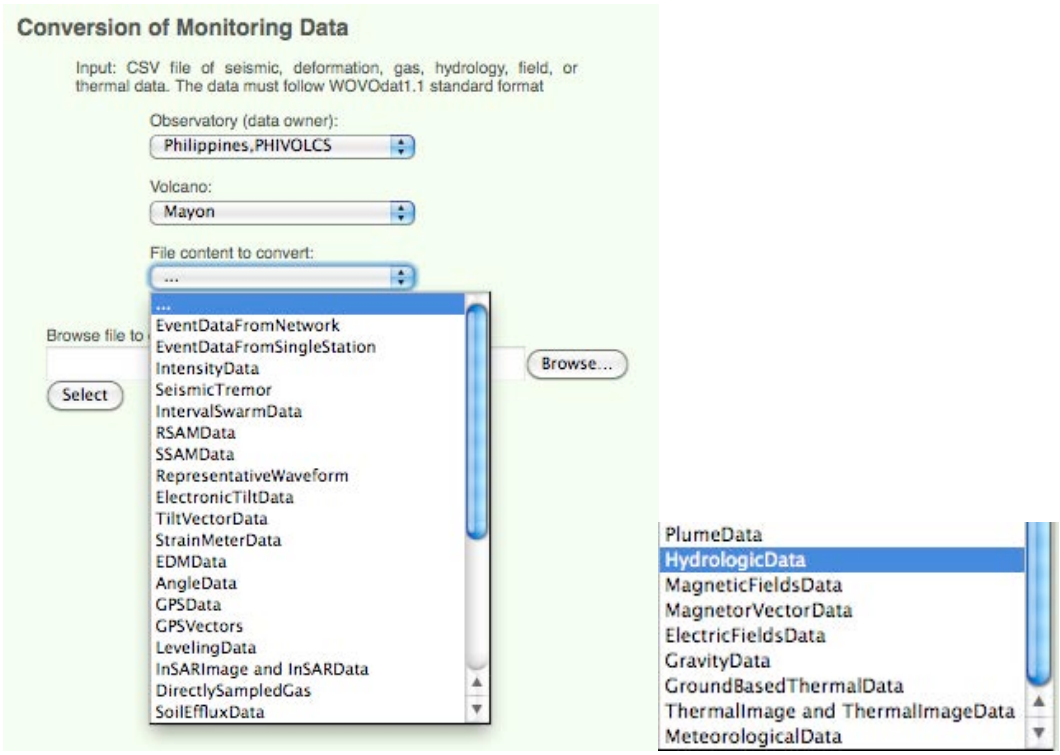
Figure 5. *WOVOdat online UI for data submission (conversion and upload).*

Submiting data through online conversion

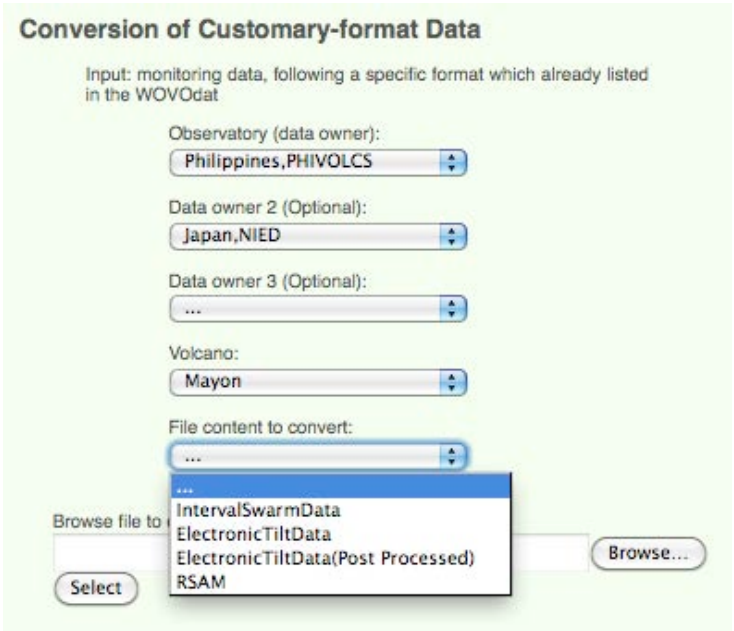
(a) Monitoring system



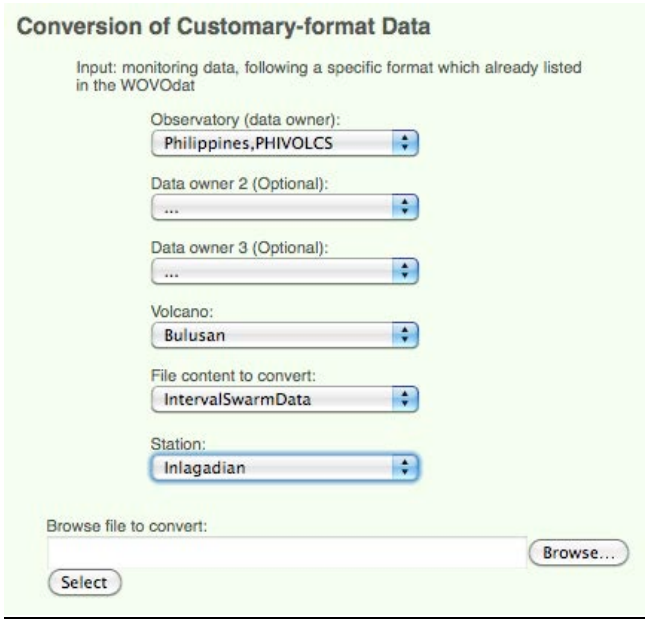
(b) Monitoring data



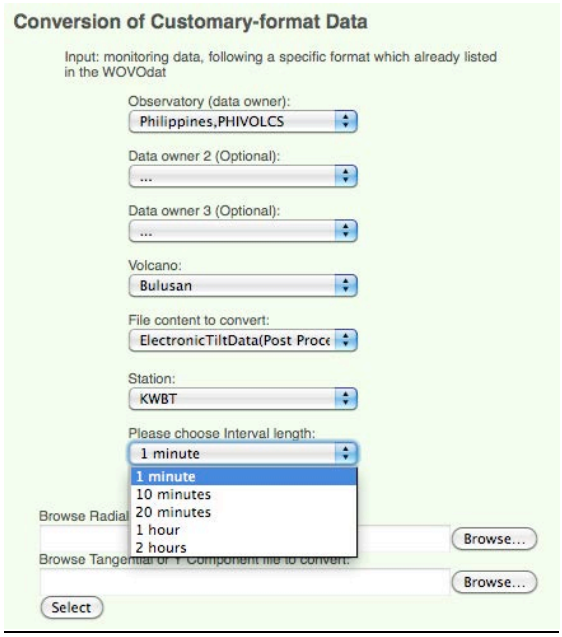
(c) Customary format data



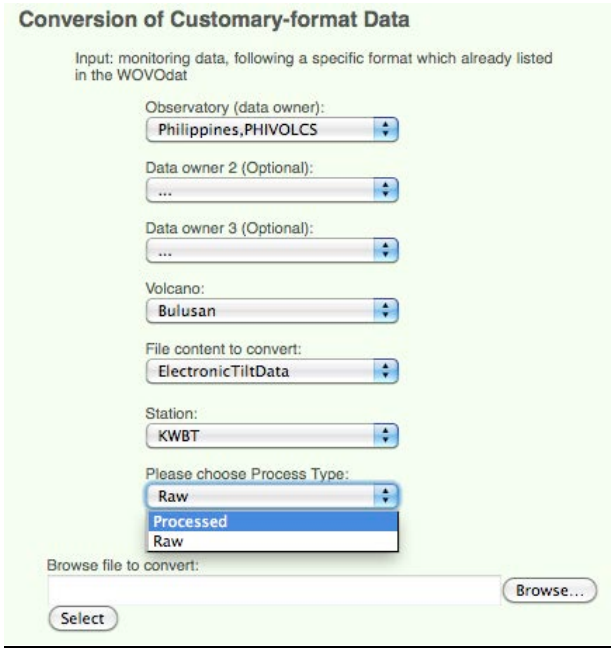
C-1. Interval Swarm Data



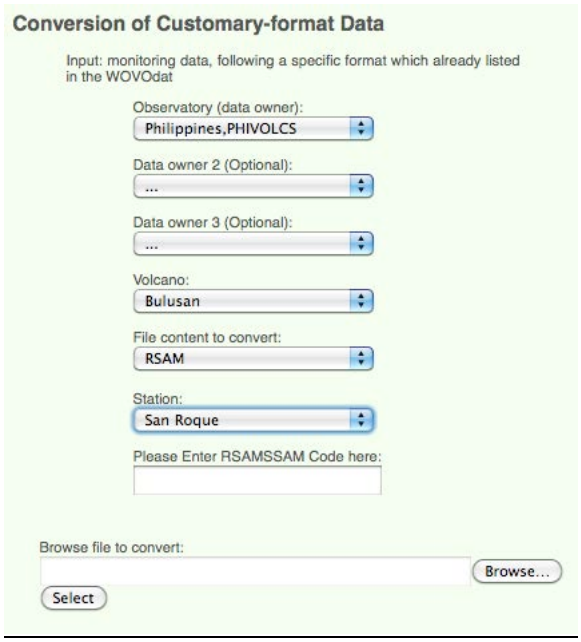
C-2. Electronic tilt data (post processed)



C-3. Electronic Tilt Data

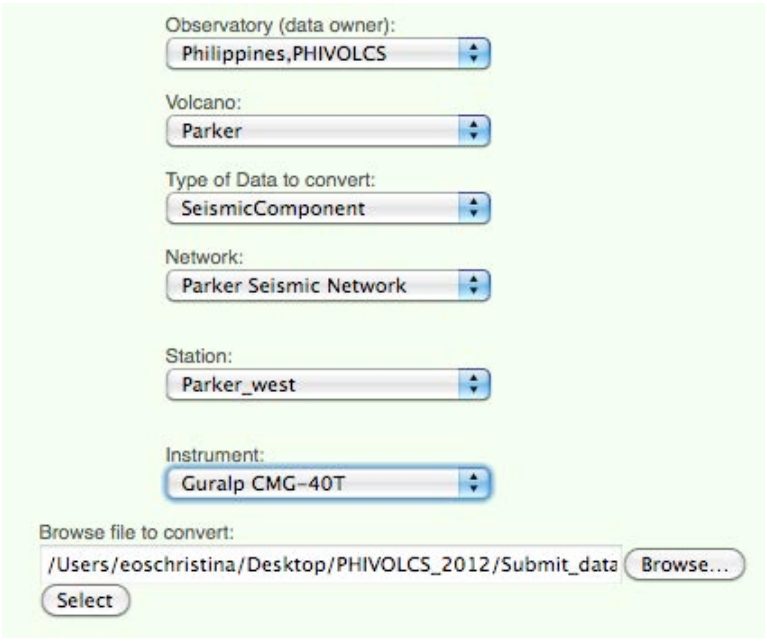


C-4. RSAM



Example of conversion processes: *conversion of seismic-component information*

1. User input: online form and submit CSV file *(following WOVOdat standard format)*



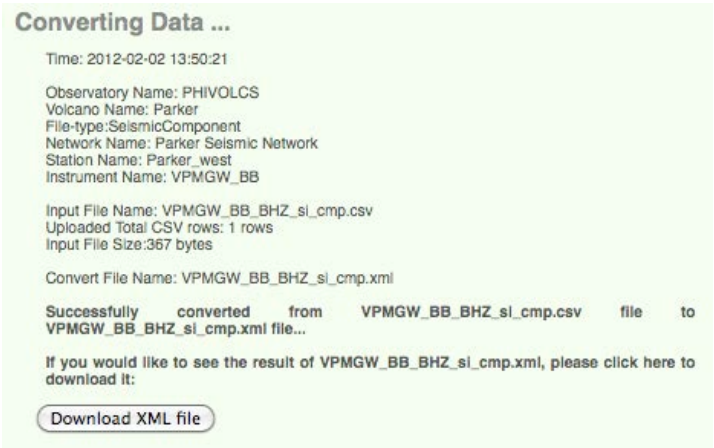
Input CSV format: si_cmp table

si_cmp_id	si_cmp_code	si_id	si_cmp_name	si_cmp_type	si_cmp_resp
	VPMGW_BB_BHE		GuralpBroadband Horizontal N-S component	horizontal E-W	frequency range: 0.04-25 Hz

si_cmp_band	si_cmp_samp	si_cmp_icode	si_cmp_orient	si_cmp_sens
Broadband	50	BHE	Clockwise,E=90,reversed=270	4.378540e+09 @ 1.000e+00 Hz (SEED Stage 0)

si_cmp_depth	si_cmp_ori	si_cmp_com	cc_id	cc_id2	cc_id3	di_tlt_loaddate	di_tlt_pubdate	cc_id_load	cb_ids
2	O	comments					2010-01-31 12:00:00		

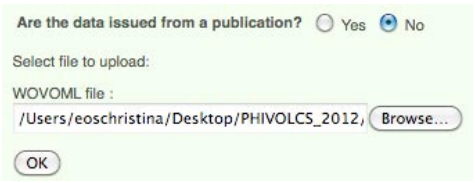
2. Converting CSV to WOVOML (WOVOdat-XML) format.

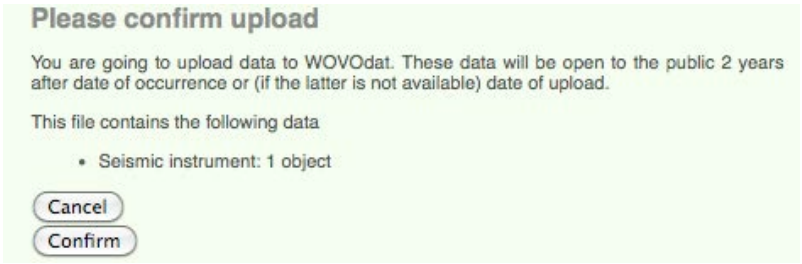


XML format: *si_cmp (seismic component)*

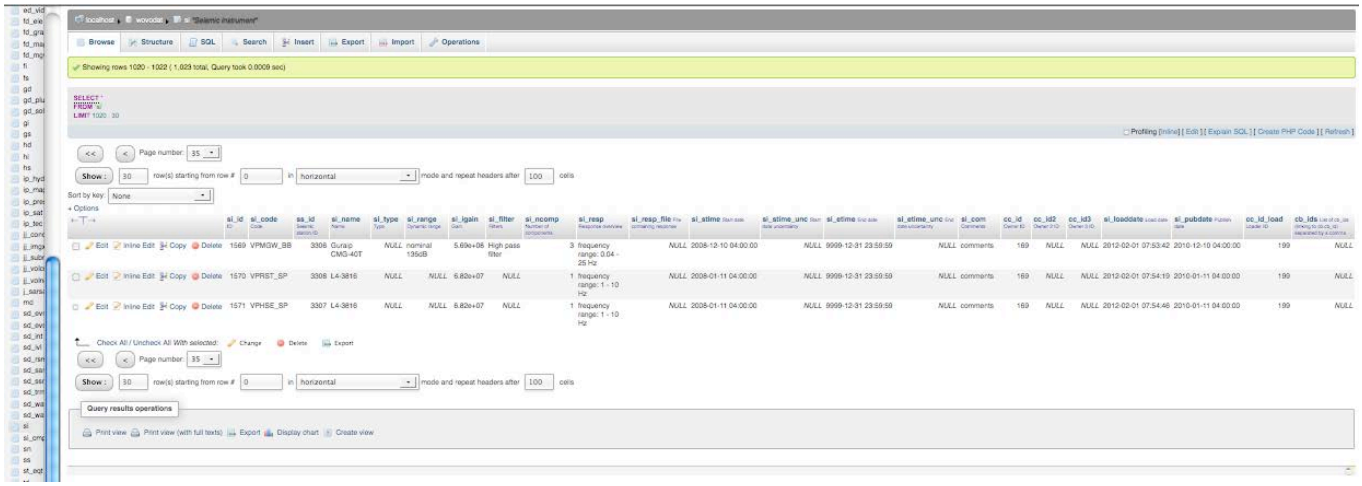
```
<?xml version="1.0" encoding="UTF-8" ?>
<wovoml xmlns="http://www.wovodat.org" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
version="1.1.0" xsi:schemaLocation="http://www.wovodat.org/WOVOdatV1.xsd">
  <MonitoringSystems>
  <SeismicComponents instrument="VPMGW_BB" owner1="PHIVOLCS">
        <SeismicComponent code="VPMGW_BB_BHE" instrument="VPMGW_BB" owner1="PHIVOLCS">
              <name>GuralpBroadband Horizontal N-S component</name>
              <type>horizontal E-W</type>
              <comments>comments</comments>
              <respDesc>frequency range: 0.04-25 Hz</respDesc>
              <sampleRate>50</sampleRate>
              <seedBandCode>Broadband</seedBandCode>
              <seedInstCode>BHE</seedInstCode>
              <seedOrientCode>Clockwise,E=90,reversed=270</seedOrientCode>
              <sensitivity>4.378540e+09 @ 1.000e+00 Hz (SEED Stage 0)</sensitivity>
              <depth>2</depth>
      <startTime>2010-06-01 12:00:00</startTime>
        </SeismicComponent>
  </SeismicComponents>
  </MonitoringSystems>
  </wovoml>
```

3. Upload XML file to MySQL database.

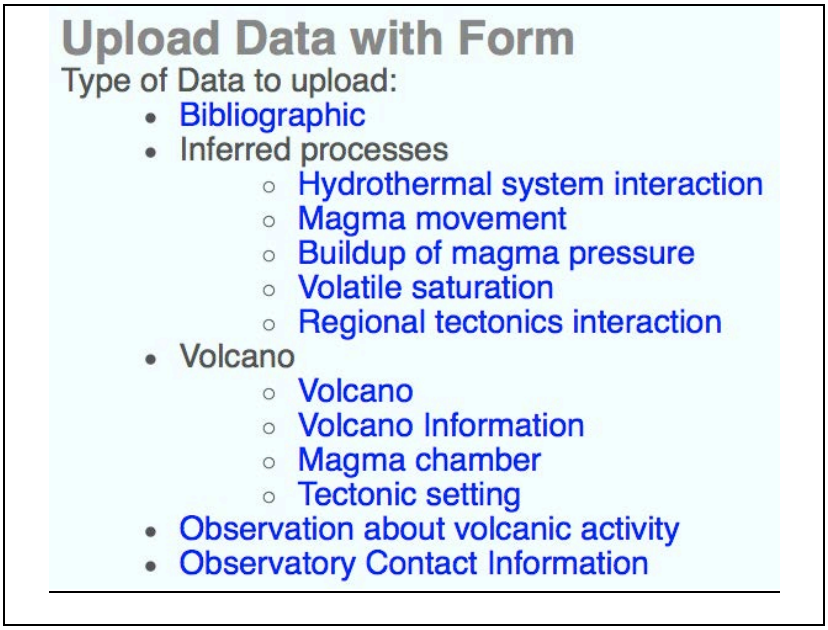




Data stored in the database.



Submiting data through online form



⇨ Bibliography table

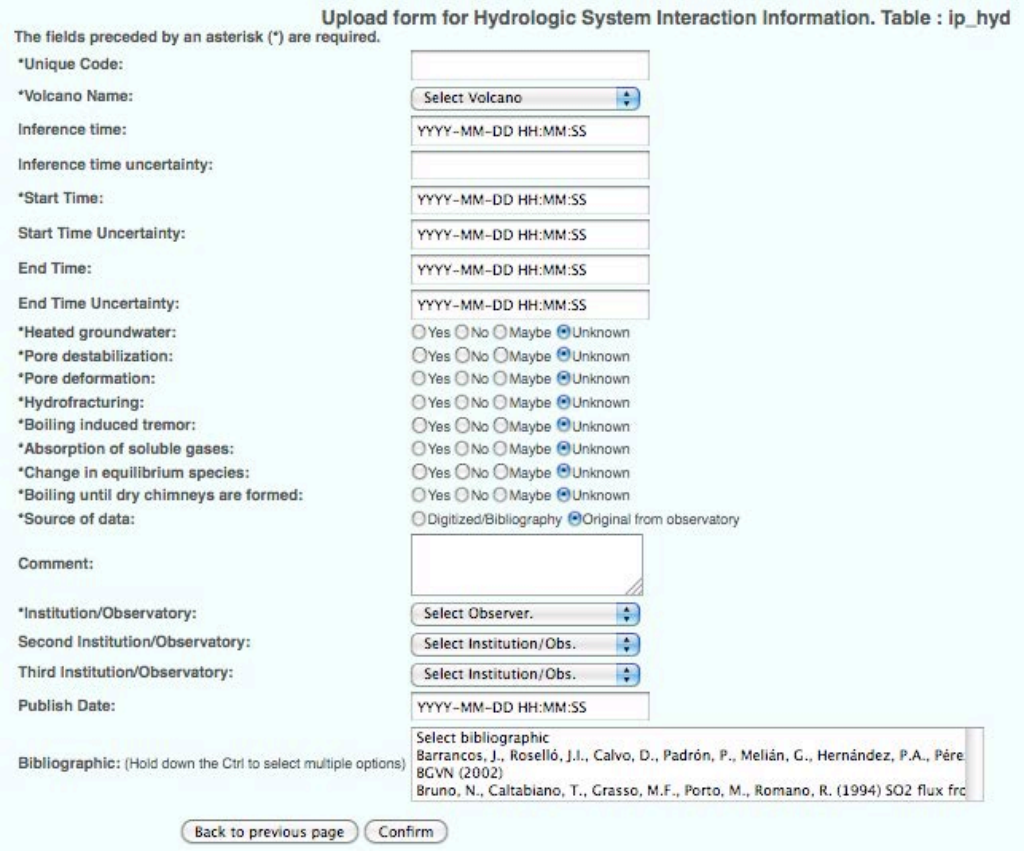
Upload form for Bibliographic Information. Table : cb

The fields preceded by an asterisk (*) are required.

*Authors/Editors:	
*Publication year (YYYY):	YYYY
*Paper Title:	
Journal Name:	
Journal Volume:	
Publisher Name:	
Page Numbers:	
Digital Object Identifier:	
International Standard Book Number (ISBN):	
Web Address (URL):	
Email address of observatory or laboratory:	
Keywords (Please separate each group of keywords with a comma):	
Comments:	

Back to previous page | Confirm

⇨ Hydrothermal system interaction



Upload form for Hydrologic System Interaction Information. Table : ip_hyd

The fields preceded by an asterisk (*) are required.

*Unique Code:	
*Volcano Name:	Select Volcano
Inference time:	YYYY-MM-DD HH:MM:SS
Inference time uncertainty:	
*Start Time:	YYYY-MM-DD HH:MM:SS
Start Time Uncertainty:	YYYY-MM-DD HH:MM:SS
End Time:	YYYY-MM-DD HH:MM:SS
End Time Uncertainty:	YYYY-MM-DD HH:MM:SS
*Heated groundwater:	Yes No Maybe Unknown
*Pore destabilization:	Yes No Maybe Unknown
*Pore deformation:	Yes No Maybe Unknown
*Hydrofracturing:	Yes No Maybe Unknown
*Boiling induced tremor:	Yes No Maybe Unknown
*Absorption of soluble gases:	Yes No Maybe Unknown
*Change in equilibrium species:	Yes No Maybe Unknown
*Boiling until dry chimneys are formed:	Yes No Maybe Unknown
*Source of data:	Digitized/Bibliography Original from observatory
Comment:	
*Institution/Observatory:	Select Observer.
Second Institution/Observatory:	Select Institution/Obs.
Third Institution/Observatory:	Select Institution/Obs.
Publish Date:	YYYY-MM-DD HH:MM:SS
Bibliographic: (Hold down the Ctrl to select multiple options)	Select bibliographic Barrancos, J., Roselló, J.I., Calvo, D., Padrón, P., Melián, G., Hernández, P.A., Pére BGVN (2002) Bruno, N., Caltabiano, T., Grasso, M.F., Porto, M., Romano, R. (1994) SO2 flux frc

Back to previous page | Confirm

5. **Contact:** *http://www.wovodat.org/populate/contact_us_form.php*

We invite scientists from volcano observatories, universities, and research institutions to participate in the growing of WOVOdat database by sharing their data and their expertise in developing visualization tools.

Contact us via email:
Christina Widiwijayanti (*cwidiwijayanti@ntu.edu.sg*)