

# SINOBAS, a tool for collaborative mapping applied to observation of “singular” weather phenomena

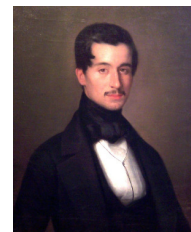
Delia Gutiérrez Rubio\*, Jesús Riesco Martín and Salvador Ponce Gutiérrez, AEMET, Spanish State Meteorological Agency (\*dgutierrezr@aemet.es)

## WHAT?

SINOBAS stands for the Spanish words for “**System for reporting singular atmospheric observations**” and is also a tribute to one of the first scientists involved in studying the atmosphere in Spain in the 19th century, Don Manuel Rico y Sinobas. It is a *Volunteered Geographic Information (VGI)* system developed at AEMET, based on Google maps and free software, aimed to facilitating citizens collaboration in reporting weather events and building up a data base of phenomena that we have named as “**singular**”, meaning:

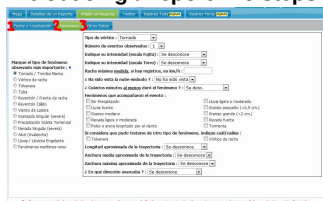
- **local** (not extended over a wide area),
- **infrequent** (not happening frequently),
- of **significant intensity** and
- with a **potential** to cause **high social impact**.

Information introduced by users is subsequently validated by AEMET.



## HOW?

### Introducing a report in 3 steps:



### Twitter area:



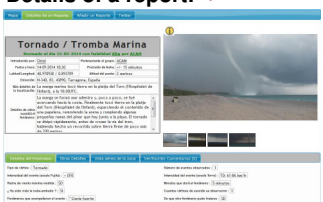
### Registration & identification. Types of users:

- Unregistered (can see the information)
- Registered (can add reports)
- Partner association (associated amateur meteorologists)
- Privileged users (AEMET personnel in charge of validation)
- Super-users (management and administration)

### Definition of each phenomenon

- and, if necessary, **threshold values** required to consider it as “singular”, available through:
- Pop-up windows
  - F.A.Q.
  - A Guide of phenomena

### Details of a report:



### Highlighted reports:

- Interest of the event and/or
- Well documented

### Multi-reports: more than one report of a single event



**Seleccione los tipos de fenómenos:**

- Tornado / Tromba Marina
- Vórtice de racha
- Tolvana
- Tuba
- Reventón / Frente de racha
- Reventón Cálido
- Viento de Ladera
- Granizada Singular (severa)
- Precipitación Súbita Torrencial
- Nevada Singular (severa)
- Alud (Avalancha)
- Lluvia / Llovizna Engelante
- Fenómenos marítimos raros

**Seleccione la fiabilidad de los eventos:**

- No Validado
- Baja
- Media
- Imposible de validar
- Alta

fecha entre 10-07-2014 | 10-07-2015

**Filtrar Eventos**

### Types of phenomena:

- Tornado/Water spout
- Gustnado
- Dust devil
- Funnel cloud
- Downburst/Gust fronts
- Heatburst
- Slope wind
- Severe hail
- Flash flood
- Heavy snowfall
- Snow avalanche
- Freezing rain
- Unusual maritime phenomena

### Reliability of reports:

- Non-validated
- Low reliability
- Medium reliability
- High reliability
- Validation impossible

### You can filter reports shown:

- By phenomena
- By level of reliability
- By date

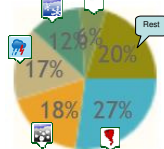
### Twitter account:

- Aimed to popularizing the system among weather enthusiasts and media
- Automatic tweets of new reports/information added to a report/validation of a report
- Automatic tweets of orange and red level weather warnings
- Subjective tweets and retweets of weather information: daily situation, news, curiosities, etc.
- Open to interaction when questions or information of interest arises from mentions or other tweets.

## RESULTS?

→ **531 reports** since start in April 2013, 75% of them considered of high reliability.

➢ Distribution of types of phenomena reported:

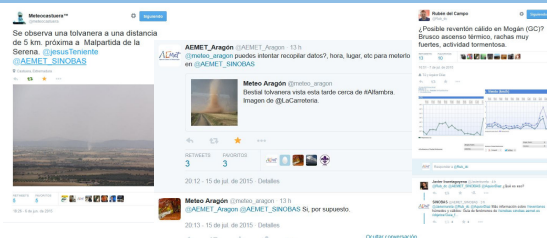


→ **633 registered users.**

→ **12 partner associations.**

→ **7804 tweets** and **3139 followers** since launching of @AEMET\_SINOBAS in March 2014.

(Data until September 1, 2015)



Some interactions and news through our twitter account

## CONCLUSIONS?

- System of particular interest for **amateur meteorologists**, and a good example of what is called “**citizen science**” or “**crowd-sourced science**”. It is also a way of **popularizing meteorological phenomena**.
- System’s **twitter account** provides a very **prompt communication** channel with the public. It is also a very effective way of **popularizing** the system and **strengthening relationships** with amateurs.
- Activity of @AEMET\_SINOBAS is of particular interest for **nowcasting**, because it can provide our forecasters a very fresh and enthusiastic input about existing weather conditions, particularly when significant weather phenomena happen. It can be followed from the system’s “**Twitter**” tab on the web site.
- Main difficulty to get an event reported is that the system requires the user to visit our website, register and fill a form. The public prefers the immediacy of a tweet. Part of the work of the management team is to **get some tweets turned into reports**, either by the public or by AEMET staff.