IMO Fireball Reports

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In 2013, the American Meteor Society (AMS) offered use of its online fireball report to the International Meteor Organization. The AMS and IMO agreed to extend the capabilities and reach of the application worldwide by enhancing the form to support a multi-lingual user interface.

1 Introduction

The American Meteor Society (AMS) founded in 1911 pioneered the visual study of meteors and has collected data relating to meteor observations and bright fireballs for over 100 years. In December 2010, the online fireball reporting system was upgraded to an interactive application that utilizes Google Maps and other programmatic methods to pinpoint the observer's location, azimuth and elevation values with a high degree of precision (Hankey et al, 2013).

The AMS has collected 10s of 1000s of witness reports relating to 100s of bright fireball events each year since the new application was released. Three dimensional triangulation methods that average the data collected from witnesses have been developed that can determine the start and end points of the meteor with an accuracy of < 50km (when compared to published solutions provided by operators of all sky cameras). Right ascension and declination (RA/dec) radiant estimates can also be computed for all significant events reported to the AMS. Data collected from the AMS fireball application has been used to successfully recover 4 meteorite falls in recent years.

2 IMO version of the Fireball Report form

In 2013 the AMS offered use of the fireball application to the International Meteor Organization. The AMS and IMO agreed to extend the capabilities and reach of the application worldwide by enhancing the form to support a multi-lingual user interface. Volunteers from the IMO worked with the AMS to provide translations for the text and instructions used in the form. The form has been translated in 27 languages thus far (Figure 1).

When users reach the form, the application automatically detects the language of the end-user and defaults the form text to that users preferred language. All other languages the form is available in are displayed in a drop down list and the user can override the default display by choosing a different language. In addition to providing the form in multiple languages, a branding option was built into the form so that regional astronomy clubs, observatories or other organizations can link to the form and have the form display that clubs logo and color scheme. By providing this branded capability, it is the hope of the AMS and the IMO that regional groups will adopt the form, link to it from their websites and generate a large base of data collection for bright fireball events.

3 Internationalization

Regional groups are also encouraged to develop native language content on their sites to attract witnesses of fireball events from Google and other online searches. Typically a fireball witness will first go to Google and search in their native language for information about what they saw. When searching in English, the AMS has become the authority on Google and this enables witnesses to easily find the fireball form and file a report into the database. Regional clubs should take ownership of this outreach responsibility for their countries and develop native language content that will attract fireball witness to their sites and then route them to the fireball form.

The AMS Fireball FAQ[1] is an excellent content source and the most popular piece of content on the AMS site. The AMS encourages regional groups to translate and host a version of the Fireball FAQ on their own sites. Doing so will attract users to the site and improve the site's ranking in Google. This will in turn generate more reports into the database. Regional groups are also encouraged to write up press releases or blog posts for their sites when significant fireball events occur in their domain. Doing so will attract the attention of the press, create publicity for the group and generate back links to the groups site from the media sources. These back links will generate traffic to the site and in turn fireball reports. The media links will also help the site rank higher in Google and the other search engines. While the forms are now translated into 26 languages and available for regional groups to use, the data will not be gathered if the forms and services are not promoted efficiently in each country. For these reasons the AMS and the IMO encourage the regional groups to not only integrate the forms into their sites, but also actively promote them so that end users and fireball witnesses can find them.

[1] http://www.amsmeteors.org/fireballs/faqf/

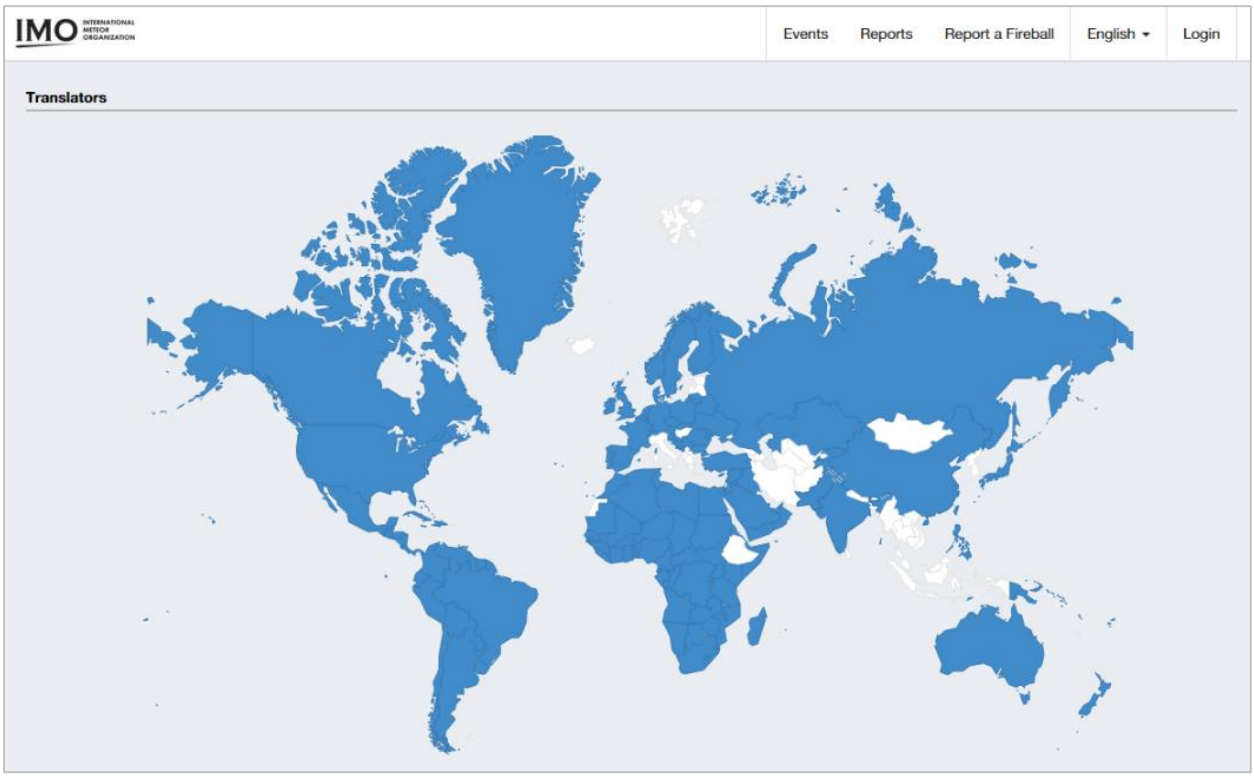

Figure 1 – Screenshot of the IMO version of the Fireball Report: language page.

4 Conclusion

All fireball data collected by the AMS, the IMO and the regional clubs will flow into a single shared worldwide fireball database. Individual fireball sightings will be reviewed by an administrator and then grouped into events based on the time and location of the sightings. These events will be given a sequential number and then trajectories and RA/dec estimates will be calculated for each event. All of the sightings and event data will be publicly accessible by the web and data export APIs. From January to October 2014 the AMS has logged over 512 confirmed fireball events (where a confirmed event is one witnessed by 3 or more witnesses). In 2013 714 confirmed fireball events were logged with the AMS. By expanding the reporting system worldwide with the help of the IMO and regional clubs, we hope to increase the number of events logged in the database at least 3 fold. The AMS and IMO encourage the community to promote this data collection method and to research these events and utilize the data to the full extent possible.

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References

Hankey M., Perlerin V., Lundsford R., and Meisel D. (2013). "*American Meteor Society Online Fireball Report*". In Gyssens M., Roggemans P., and Żołądek P., editors, *Proceedings of the International Meteor Conference*, Poznań, Poland, 22–25 August 2013, IMO, pages 115–119.