

The Virtual Telescope Project: a bridge connecting professional and amateur astronomers

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Abstract

Started in 2006, the Virtual Telescope Project (www.virtualtelescope.eu) is now an internationally recognized facility amazingly active in both science and public outreach. For this, it a perfect place for professional and amateur astronomers to meet. While many scientific activities are running there, with outstanding results in photometric and/or spectroscopic characterization of exoplanets, cataclysmic variables, novae and supernovae, as well as observation of minor bodies, many astronomical events are shared live with a huge international public, via web feed. We share spectacular cosmic events, often very unique, but also important targets, as very close asteroids or important supernovae, making possible to people to enjoy frontier astrophysics with alive cases, interacting live with our professional team while it does research on the field.

This format proved to be very successful, as numbers clearly show: a few millions of individuals from all Countries joined our online events, sometimes very exceptional ones, like with asteroid 2012 DA14, who made a record close approach with the Earth in Feb. 2014.

The Virtual Telescope Projects contributed and contributes to many programs, like Comet Ison Observing Campaign, Comet Integrated Observing Campaign (with the special case of comet 2013 A1 going to have a close encounter with Mars later this year) and many more, with many hundreds of contributions to professional literature.

1. Science

The Virtual Telescope Project (VTP) robotic facility was started for scientific purposes. Having a telescope system easily accessible via a smartphone or a computer could make possible to do great astrophysics on optical transients.

Since 2006, the VTP observed many hundreds of transients, with outstanding results in optical and spectroscopic follow-up of (super)nova candidates (for example, the famous Nova Delphini 2013-V339Del was indicated as a nova by our spectroscopy [1]); also, the science done on cataclysmic variable stars was exceptional: more than 50 of these systems had their exact nature determined by our data, often the only one available [2].

Gamma-Ray Bursts are another rewarding area of interest, with several optical afterglows detected, the most recent one being GRB 140508A [3].

Exoplanets are another important area, with the VTP appearing as co-discoverer of the XO-2b and XO-3b exoplanets [4].

2. Public outreach

Without doubts, the VTP is one of the most active facilities in the world doing public outreach in the astronomical field. Adding that it is a private facility, with no serious funding at all and fully based on volunteer efforts will make its case even more outstanding [5].

The VTP was a key project during the International Year of Astronomy 2009 (IYA2009), when it was officially asked to coordinate the “100 Hours of Remote Astronomy”, a pioneering effort in the field of science communication.

With hundreds of online observing events, featured on the most important media of the planet, often covering exclusive targets (like asteroid 2012 DA14, Nova Delphini 2013-V339 Del, Supernova SN 2014J in Messier 82, the 14/05/2014 lunar occultation of Saturn) and real time interaction among viewers and scientists, the VTP makes a very special case of citizen science and culture: since Sept. 2012 to 11 May 2014, more than two millions viewers from 231 Countries joined our activities.

Acknowledgements

Thanks go to UnitronItalia Instruments, Software Bisque, Santa Barbara Instrument Group, Baader Planetarium, PlaneWave Instruments, they being the technological partners of the VTP.

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