

ISBN 978-2-87355-024-4

**Proceedings of the
International Meteor Conference
La Palma, Canary Islands, Spain
20–23 September, 2012**



Published by the International Meteor Organization 2013
Edited by Marc Gyssens and Paul Roggemans

Proceedings of the International Meteor Conference
La Palma, Canary Islands, Spain, 20–23 September, 2012
International Meteor Organization
ISBN 978-2-87355-024-4

Copyright notices

© 2013 The International Meteor Organization

The copyright of papers in this publication remains with the authors.

It is the aim of the IMO to increase the spread of scientific information, not to restrict it. When material is submitted to the IMO for publication, this is taken as indicating that the author(s) grant(s) permission for the IMO to publish this material any number of times, in any format(s), without payment. This permission is taken as covering rights to reproduce both the content of the material and its form and appearance, including images and typesetting. Formats may include paper and electronically readable storage media. Other than these conditions, all rights remain with the author(s). When material is submitted for publication, this is also taken as indicating that the author(s) claim(s) the right to grant the permissions described above. The reader is granted permission to make unaltered copies of any part of the document for personal use, as well as for non-commercial and unpaid sharing of the information with third parties, provided the source and publisher are mentioned. For any other type of copying or distribution, prior written permission from the publisher is mandatory.

Editing team and Organization

Publisher: The International Meteor Organization

Editors: Marc Gyssens and Paul Roggemans

Typesetting: L^AT_EX 2_ε (with styles from Imolate 2.4 by Chris Trayner)

Printed in Belgium

Legal address: International Meteor Organization, Mattheessensstraat 60, 2540 Hove, Belgium

Distribution

Further copies of this publication may be ordered from the Treasurer of the International Meteor Organization, Marc Gyssens, Mattheessensstraat 60, 2540 Hove, Belgium, or through the IMO website (<http://www.imo.net>).

Asteroid 2010 TU₁₄₉ in the Taurid Complex

Regina Rudawska¹, Jérémie Vaubaillon¹, and Peter Jenniskens²

¹IMCCE, Observatoire de Paris, 77 avenue Denfert-Rochereau, F-75014 Paris, France
rrudawska@imcce.fr and vaubaillon@imcce.fr

²SETI Institute, 189 Bernardo Ave., Mountain View, CA 94043, USA
pjenniskens@mail.arc.nasa.gov

In this talk, we presented a survey of results dealing with investigating the association of asteroid 2010 TU₁₄₉ with the Taurid meteoroid stream.

Summary

The Taurid shower is a long-lasting meteor shower. It is accepted that the stream is a complex of several small meteoroid streams. It includes parts of night-time and day-time showers, which are divided into two branches (northern and southern). The stream has a perihelion distance of about 0.4 AU and an eccentricity of about 0.85. Moreover, it is a stream with a very low inclination of less than 5°.

There is no simple explanation for the long duration and dispersion of the Taurid Complex stream. It was suggested that a giant comet disintegrated into smaller pieces, one of which was Comet 2P/Encke, which is already associated with the Taurid stream. But apart from 2P/Encke, several minor planets have been associated with the Taurids as well (Asher and Steel, 1995; Steel and Asher, 1996; Babadzhanov et al., 2008).

Rudawska et al. (2012) noticed a possible connection between several meteors from the Armagh Observatory meteor database and the asteroid 2010 TU₁₄₉. This asteroid has not been considered as an object belonging to the Taurid Complex yet.

The asteroid was discovered on 13 October 2010 by LINEAR. Its orbital elements are $q = 0.3783$, $e = 0.8281$, $\omega = 91^\circ 6385$, $\Omega = 59^\circ 7737$, and $i = 1^\circ 9716$. The Tisserand invariant for its orbit has a value of 3.09 with respect to the planet Jupiter.

References

- Asher D. J. and Steel D. I. (1995). “Theoretical meteor radiants for macroscopic Taurid Complex objects”. *Earth, Moon, and Planets*, **368**, 155–164.
- Babadzhanov P. B., Williams I. P., and Kokhirova G. I. (2008). “Near-Earth objects in the Taurid Complex”. *MNRAS*, **386**, 1436–1442.
- Rudawska R., Vaubaillon J., and Atreya P. (2012). “Association of individual meteors with their parent bodies”. *Astronomy and Astrophysics*, **541**, A2.
- Steel D. I. and Asher D. J. (1996). “The orbital dispersion of the macroscopic Taurid objects”. *MNRAS*, **280**, 806–822.