

CICERO: Community Initiative for Continuing Earth Radio Occultation

Thomas Yunck¹, Chris McCormick², and Christian Lenz²

¹*GeoOptics Inc., Pasadena, California*

²*Broad Reach Engineering, Golden, Colorado*

tyunck@charter.net

The radio occultation community has had considerable difficulty securing sponsorship for an operational follow-on mission to COSMIC, which is nearing its end. As there seems to be a broad consensus on the scientific value of GNSS-RO, and much eagerness on the part of users for a continuing and, indeed, expanded supply beyond COSMIC, this failure has been both puzzling and frustrating. At a time when government budgets are being cut severely, there are extraordinary demands on public agencies, which have done a great deal already to nurture and validate GNSS-RO. Securing funding for a new operational mission is a lengthy and uncertain endeavor even in the best of times. The CICERO Project is an attempt by members of the GNSS-RO community to expedite that process by putting up the money for an operational mission—raising it privately and recovering costs through affordable and broadly distributed data subscriptions, primarily from government agencies around the world. The goal is an international public-private partnership that will realize new efficiencies in Earth remote sensing and enable fast-track deployment of GNSS-RO and other worthy new environmental sensors. Among the attractions of this approach are:

- System development times can be cut in half.
- Market incentives will drive down mission costs.
- Those costs can be distributed over dozens of subscriber groups.
- Subscribers pay only on delivery of validated data; the public incurs no risk.
- Data purchases can be made with general funds, with no legislative action.
- Common snags in securing agency approval of a new mission are avoided.
- Subscriber fees will pay for system maintenance and upgrade in perpetuity.
- Scientists will decide how best to configure and manage the system.
- The constellation can serve as an infusion path for new sensing technologies.

CICERO organizers hope to fly compatible, synergistic Earth science payloads beginning with the first launch in 2013. Some possibilities include:

- Science-quality magnetometers
- High-performance accelerometers for gravity mapping
- A diversity of ionospheric and space environmental sensors
- Small imagers and radiometers
- Laser retro-reflectors

CICERO will be a self-supporting enterprise of the greater GNSS-RO science and user communities, who will share in its design, evolution, and success. This presentation will cover the rationale, baseline design, and status of CICERO and will discuss plans and prospects for the next five years.