



## IEEE Central Coast Section Dinner Meeting

Monday, May 13, 2013

### ***Commercially Hosted Remote Sensing: History, Challenges and Opportunities***

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Remote sensing has been a mainstay of research, development, and applications on the Central Coast for many years, in both defense-related and commercial industries. Remote sensing technology rapidly advanced from aerial photography to imaging using satellite-borne instruments, innovative sensors operating in different portions of the electromagnetic spectrum, and data capture in digital rather than analog formats.



At the IEEE Central Coast Section Spring Dinner Meeting, Dr. Carl Schueler describes events over the past twenty years leading to the conception, September 2011 launch, and recent completion of the first remote sensing mission hosted on a commercial geostationary earth orbiting (GEO) telecommunications satellite. He reviews challenges associated with the mission, known as the Commercially Hosted Infrared Payload (CHIRP), along with such benefits as a 6:1 cost reduction compared to traditional "dedicated" GEO missions. A government Hosted Payload Office was established to coordinate application of the commercially hosted payload model demonstrated by CHIRP to future missions – Dr. Schueler summarizes a planned commercially hosted NASA science mission to illustrate the effectiveness of this approach.

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After retiring as Chief Scientist and Principal Engineering Fellow at Raytheon Santa Barbara Remote Sensing (SBRS) in 2006, Dr. Schueler consulted until joining Orbital Sciences Corporation in 2008 after leading the Commercially Hosted InfraRed Payload (CHIRP) technical proposal for the largest unsolicited award in Air Force history. As CHIRP chief scientist, he coordinated sensor modifications, testing and on-orbit experiment definition leading to September 2011 launch and mission completion in July 2012. Dr. Schueler returned to consulting in Fall 2012 with Arrow Science & Technology, Cornell Technical Services, MEI Technologies, Lexerdtek Corp., and Orbital.

Dr. Schueler received a B.S. and M.S. in Physics & Astronomy at Louisiana State University. He joined Troy State University as Professor of Astrophysics in 1973 followed by two years at Hughes Aircraft Company teaching aircraft radar and missile guidance theory and field repair. He earned an M.S. and Ph.D. in Electrical & Computer Engineering (ECE) at UC Santa Barbara (UCSB) in 1977 and 1980 under a Howard Hughes Doctoral Fellowship while teaching physics at Santa Barbara City College. From 1981-1991 he was UCSB ECE Adjunct Professor and Manager Advanced Applications at Hughes Santa Barbara Research Center (SBRC) where he led conceptual definition of the Earth Observer-1 Advanced Land Imager (ALI) and managed the Landsat 7 Enhanced Thematic Mapper (ETM) calibration upgrade leading to Landsat science team praise for ETM as “the best characterized remote sensing system in history.”

He pioneered commercial remote sensing including helping form the Earth Observation Satellite Corporation (EOSAT) and initiating the Institute for Technology Development at Stennis Space Center in the mid-80’s as founding Director. He conceived the commercially-hosted payload concept with Hughes Space & Communications Group and NASA Langley Research Center in the mid-90’s that provided the foundation for CHIRP. He led numerous planetary and Earth observing instrument proposals, studies and development programs including the 2001 Mars Thermal Emission Imaging System (THEMIS) proposal. THEMIS was the first to apply uncooled micro-bolometers to a space mission and conceptual definition and design of the revolutionary Visible Infrared Imager/Radiometer Suite (VIIRS) launched in 2011, including patenting VIIRS “constant resolution” over the horizon-to-horizon imaging field of regard.

Dr. Schueler is Senior Member of IEEE and the Society of Photo-Optical Instrumentation Engineers (SPIE) and the American Institute of Aeronautics and Astronautics (AIAA). He serves on SPIE's Earth Observing Systems program committee and is Secretary of the AIAA Space Systems Technical Committee. He has authored or co-authored over 80 book chapters and papers on remote sensing and instrument design, and has served on six National Research Council (NRC) committees, including the 2007 Decadal Study Weather Panel and the 2011 Committee on Sustained Ocean Color Research.

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*Where:* The Marmalade Café, Santa Barbara, CA

*When:* Monday, May 13, 2013

Social Hour with appetizers 6:00 p.m,  
Dinner: 6:30 p.m.  
Presentation: 7:00 p.m.

*Cost:* **\$20 for IEEE Members**  
(\$40 for non-IEEE-members)



***Marmalade Café***

La Cumbre Plaza  
Santa Barbara, CA

***Reserve your space today! – register at:***

<http://ieeecs20130513.eventbrite.com>

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***Reply today! Space is limited... Don't miss this exclusive spring event!***

Questions? Contact: [IEEECentralCoast@gmail.com](mailto:IEEECentralCoast@gmail.com)