

JAMES A. SECAN
SENIOR RESEARCH SCIENTIST
NORTHWEST RESEARCH ASSOCIATES, INC. (TUCSON, ARIZONA)

Specialized professional competence:

- Ionospheric physics, modeling of the near-earth space environment, space environment data analysis and processing systems, effects of the space environment on satellite and communications systems.

Representative recent research:

- Develop techniques for ionospheric tomography; oversee deployment of tomographic system in Alaska; analyze images of ionospheric electron density from the system.
- Develop improvements to the WBMOD ionospheric irregularity model based on the analysis of data from the WIDEBAND, HiLat, Polar BEAR, and GPS satellites;
- Develop methods for using ionospheric scintillation and in-situ density observations in an automated analysis of global scintillation patterns;
- Develop processing software for the Special Sensor for Ions, Electrons, and Scintillation (SSIES) flown on the USAF Defense Meteorological Satellite Program (DMSP) spacecraft;
- Develop a computer model of the global ionosphere for radiofrequency raytrace applications;
- Develop methods for using in situ satellite observations of ionospheric parameters in models of the ionosphere plasma density distribution.

Other professional experience:

- Oversee and coordinate support for HAARP diagnostic instrumentation
- Oversee upgrade and deployment of USAF Ionospheric Measuring System (IMS)
- Director of Software Development, NWRA Beach Probing System Project (ONR)
- Commander, USAF SOON Observatory in Ramey, Puerto Rico;
- Space Environment Support Staff Officer for the Chief, Special Projects Branch, Air Force Global Weather Central.

Academic background:

- B.S. in Astronomy (1971), University of Arizona;
- Graduate Studies in Meteorology (1972), St. Louis University;
- M.S. in Atmospheric Sciences (1976), UCLA.

Representative Publications:

- Ionospheric trough behavior in Alaska, with E. Fremouw and G. Bishop;
- Large scale structuring of plasma density perturbations in ionospheric modifications, with A. Gurevich, E. Fremouw, and K. Zybin;
- Evidence for the tongue of ionization under northward IMF conditions, with H. Middleton, S. Pryse, L. Kersley, G. Bust, E. Fremouw, and W. Denig;
- Radio tomographic imaging of the northern high-latitude ionosphere on a wide geographic scale, with L Kersley, S Pryse, M Denton, G Bust, E Fremouw, M Conde, N Jakowski, and G Bailey
- High latitude upgrade to the WBMOD ionospheric scintillation model, with E. Fremouw, R. Bussey, and Sa. Basu;
- Statistical studies of an effective sunspot number, with P. Wilkenson;
- An improved model of equatorial scintillation, with E. Fremouw, R. Bussey, and Sa. Basu;
- A Survey of Computer-based Empirical Models of Ionospheric Electron Density;

- An Assessment of the Application of In Situ Ion-density Data from DMSP to Modeling of Transionospheric Scintillation, with R. M. Bussey;
- The 4D Ionospheric Objective Analysis Model, with T.F. Tascione;

Professional associates:

- American Geophysical Union;
- Associate Member, URSI Commission G;
- Institute of Electrical and Electronics Engineers.