

Visit to University of Michigan

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With support from the PBASE program, I visited the University of Michigan, Ann Arbor, USA, from 17 August to 31 August 2025. The purpose of the visit was to collaborate with Professor Daniel Welling in the Department of Climate and Space Sciences and Engineering on developing a coupling between the Space Weather Modeling Framework (SWMF) and the Ring Current Atmosphere Interaction Model with Self-consistent Magnetic field (RAM-SCB).

During the two-week visit, I worked closely with Prof. Welling to develop and test the coupling between the two models. Together, we resolved compilation issues, successfully built the coupled codes, and established a GitHub repository (<https://github.com/patronus19/RAM-SCB>) to support ongoing and future development. This technical progress lays an important foundation for advancing integrated space weather modeling capabilities and directly supports our shared research objectives in magnetospheric physics.

Alongside the work on coupling and testing the model, I attended group meetings, presented my research on SWMF, and engaged in discussions with researchers in the department. These exchanges helped refine the scientific direction of our project and strengthened collaborative ties between our research groups.

I also participated in the SpacePy Hackathon on 22 August, organized by Prof. Welling and his team. The event brought together participants from several institutions, including Los Alamos National Laboratory (LANL), to address known issues in the SpacePy package. Contributing to this hackathon was a valuable learning experience, providing hands-on exposure to collaborative software development and deepening my understanding of Python-based tools for space physics data analysis.

Beyond academic activities, I enjoyed exploring Ann Arbor during the weekend. A highlight was visiting the Ann Arbor Botanical Garden and the Nichols Arboretum with colleagues, taking advantage of the pleasant summer weather to experience the local natural beauty.

Overall, the visit was highly productive both scientifically and professionally. The progress on the SWMF-RAM-SCB coupling, along with the collaborative interactions fostered during my visit, will benefit both research groups and contribute meaningfully to advancing modeling capabilities in space weather studies. I am grateful to the PBASE program for supporting this visit, and to Prof. Welling and his group for their warm welcome and fruitful collaboration.

