

# Mass Loss from Io's Unique Atmosphere: Do Volcanoes Really Control Jupiter's Magnetosphere?

## Meeting #2 – Bern – September 11-15, 2023

Location: ISSI, Hallerstrasse 6, 3012 Bern, Switzerland      AND remote on Zoom

<https://g.page/ISSIBern?share>

ISSI's Covid rules: [www.issibern.ch/local-guide/covid19-rules-current-situation/](http://www.issibern.ch/local-guide/covid19-rules-current-situation/)

Zoom Link (new, provided by ISSI now):

<https://us02web.zoom.us/j/82622751694?pwd=Q2RNcy9XQmFUUU1JY21wdGJmeTYvZz09>

Meeting ID: 826 2275 1694

Passcode: Jupiter

### ***Participants - in person:***

Lorenz Roth (Lead)  
Aljona Blöcker  
Katherine de Kleer  
David Goldstein  
Joachim Saur  
Carl Schmidt  
Fuminori Tsuchiya  
Vincent Dols  
Hans Huybrighs  
Stephan Schlegel  
Jamey Szalay  
Masato Kagitani  
Ryoichi Koga  
Zac Milby

### ***Remote participants:***

Emmanuel Lellouch  
Darrell Strobel  
Chihiro Tao  
Alessandro Mura  
John Spencer  
Wendy Tseng  
Sarah Badman  
Diego Moral Pombo  
Shahab Fatemi  
Fran Bagenal  
Imke de Pater  
Kurt Retherford  
Alfred McEwen  
Anne-Cathrine Dott

### ***from Bern:***

Nick Thomas (Univ. Bern)  
Lea Klaiber (Univ. Bern)  
Audrey Vorburger (Univ. Bern)

### **Google Drive:**

<https://drive.google.com/drive/folders/1b09DVJKthW-IzCrT1VjC7EGtOasLh29B?usp=sharing>

==> Schedule on the following pages

All times in CEST (local time, Bern)

## **Monday, Sep 11**

11:00 L. Roth Organizational matters  
Io Quiz!  
Round the table  
L. Roth Objectives and goals of the meeting  
Discussion of sketch / paper sections / forming groups / reviewing sections

~12:30 Lunch

14:00 D. Strobel Can Io Volcanism trigger mass loss to the Io Plasma Torus?

~15:00 Coffee break

15:15 J. Saur Upward energy flux from the Jovian ionosphere and possible effects on the equatorial magnetosphere  
Discussion of the sketch and glossary  
Discussion on agenda

17:00 *Apéro by ISSI*

18:00 *Aare river floating (obligatory if not writing at least 1 page in paper at the time)*

<https://goo.gl/maps/5tZpqwqEDATurihX8> - <https://goo.gl/maps/wwVKWZmBq7XJQCo9>

## **Tuesday, Sep 12**

Morning: Atmosphere modelling, Escape and torus modelling

9:30 D. Goldstein Increasing the complexity in modeling the Tvashtar plume

~10:45 => **Work on Paper sections**

~11:00 Coffee break

11:20 V. Dols Latest results from modeling of interaction processes, and atmosphere escape and torus  
Discussion about canonical number and what it stands for

~12:00 => **Work on Table of Events**

12:30 Lunch

Afternoon: Spacecraft in-situ measurements

14:00 H. Huybrighs Update on Galileo energetic proton signatures near Io

J. Szalay Pick-up ions in the magnetosphere:  $H_2^+$  from icy moons and predictions for Io

~15:15 Coffee break

F. Tsuchiya Corotation delay of the Io plasma torus seen by Hisaki  
(Discussion on mass loss processes, Discussion of scaling table until 16:30)

18:30 *Dinner: Altes Tramdepot - <https://altestramdepot.ch/en/Welcome>  
(<https://goo.gl/maps/1k1wyShQdHqFwV6q7>)*

## **Wednesday, Sep 13**

### Morning: (Recent) observations of Io

- 9:30 M. Kagitani Ground-based monitoring of the plasma torus (2015-2021)  
K. de Kleer JWST NIRSPEC observations in eclipse, and more (?)  
E. Lellouch JWST MIRI observations of Io's atmosphere and surface
- Z. MilbyKeck HIRES aurora observations of all Galilean moons  
C. Schmidt Recent (Keck) observations of Io  
S. Badman Aurora observations around the 2022 aurora brightening.

12:30 Lunch

### Afternoon: Juno JIRAM and upcoming (or very recent) observations of Io

- 14:00 K. de Kleer JWST MIRI ERS and upcoming Cycle 2  
L. Roth VLT/VISIR  
W.-L. Tseng SMA

Coffee break

- K. Retherford HST/JWST Cycle 31  
A. Mura Recent Juno JIRAM images of Io

Discussion: How can we use these observations to improve understanding of mass loading

## **Thursday, Sep 14**

### Morning: Various topics

- 9:30 A. Blöcker Dust measurements – indicative of volcanic eruptions?  
F. Tsuchiya LAPYTUA mission status  
R. Koga SO<sub>2</sub> frost and dust mid-IR spectra experiments

Work on paper: Sections / Table / Sketch

12:10 Lunch

### Afternoon

- 13:30 N. Thomas Io mission concept(s)  
**Work on term definitions / glossary**  
**Paper sections**

## **Friday, Sep 15**

- 9:30 L. Roth Summary of the meeting  
**Work on paper**  
Second Discussion of the Sketch  
Planning ahead and tasks for the group(s)

12:30 Adjourn