

## **SOLAR SYSTEM ATMOSPHERES' INVESTIGATION AND EXOPLANETS S-SAIL**

### Workshop S-SAIL Report

The workshop S-SAIL: SOLAR SYSTEM ATMOSPHERES' INVESTIGATION AND EXOPLANETS held in Lisbon on June 2019, at Faculdade de Ciências da Universidade de Lisboa, was a major success.

All the program activities, annexed to this document, were fulfilled.

The themes discussed covered several topics concerning planetary atmospheres, in the solar system and exoplanets, namely: the characterization of Solar-System atmospheres: In this context the discussion focused on the problem of understanding the atmospheric circulation and climate systems, both from the point of view of planetary evolution and using Solar System as proxies and as model atmospheres for Earth-like and gas giant exoplanets. These studies will allow to use the Solar System models as a proxy for the characterization of exoplanet's atmospheres.

Regarding exoplanets atmospheres we discussed the characterization of exoplanetary systems, including their internal structure, atmospheres, and host stars. We also discussed a great deal about atmosphere modelling and synergies between Solar System atmosphere modelling and exoplanet atmospheres' modelling.

Several new collaborations emerged from this workshop: on atmospheric chemical retrieval between Institute of astrophysics and Observatoire de Paris, on atmospheric modelling between LMD and IA and Denmark, those among others.

Scientific Programme (general view - for a detailed program please see the attached program):



	TIME						
	A	B	C	D	E	F	G
1	<b>TIME</b>	<b>DAY 1 - 27 June 2019</b>		<b>TIME</b>	<b>DAY 2 - 28 June 2019</b>		
2	9:00-9:30	registration/Welcome coffe?		9:00-9:15	Emmanuel Marcq	Atmospheric characterization: Solar System	
3	9:30-10:00	A. Sanchez Lavega	Clouds & Dinamics	9:15-9:45	Arianna Piccialli		
4	10:00-10:15	Peio Iñurriagarro		9:45-10:00	Joana Oliveira		
5	10:15-10:45	Santiago P. Hoyos		10:00-10:30	Olivier Demangeon		
6	10:45-11:00	Miguel Silva		10:30-11:00	Jorge H.Martins		
7				11:00-11:10	POSTER presentation	~2 min per person	
8	11:00-11:30	coffe break	POSTERS	11:10-11:30	Coffee break	POSTERS	
9	11:30-12:00	Pedro Machado	Atmospheric Waves	11:30-12:00	Emmanuel Marcq	Atmospheric characterization: exoplanets	
10	12:00-12:15	Ruben Gonçalves		12:00-12:15	Athanasia Nikolaou		
11	12:15-12:30	J. Hernandez-Bernal		12:15-12:30	Safoura Tanbakouei		
12	12:30-13:00	Pedro Miranda		12:30-13:00	Therese Encrenaz		
13	13:00-14:30	lunch break		13:00-14:30	Lunch break		
14	14:30-15:00	Peter Read	Atmospheric modeling	14:30-15:00	Thomas Widemann	Present & Future missions	
15	15:00-15:30	Gabriella Gilli		15:00-15:30	Alejandro Cardesin		
16	15:30-15:45	Jose Silva		15:30-15:45	Miriam Cisneros		
17	15:45-16:00	J. Pla Garcia		15:45-16:00	Ricardo Hueso		
18							
19	16:00-16:30	coffe break	POSTERS	16:00-16:30	Coffee break ?		
20	16:30-17:00	Aymeric Spica	End of the meeting				
21	17:15-17:45	Joao Mendonça					
22	17:45-18:00	Roman Mike					
23							
24							
25	20:30:00	SOCIAL DINNER					
26							
27							
28							
29	NOTE : Invited talks time slot is maximum 30 mins (~ 20/25 min talk + questions + change of speakers)						
30							

List of Participants:



	A	B	C	D	E	F	G	H
1	<b>Name/Surname</b>	<b>Abstract</b>	<b>Registration</b>	<b>Country</b>	<b>Gender</b>	<b>Invited (Y/N)</b>		
2	Mike Roman	Y	Y	UK	M			
3	Arrate Antunano	Y	Y	UK	M			
4	Ricardo Hueso	Y	Y	Spain	M			
5	Maarten Roos	N	N	France	M			
6	Safoura Tanbakuei	Y	Y	Spain	F	sent vouchers	PHD STUDENTS with grants	
7	Joana Oliveira	Y	Y	France	F			
8	Jorge Hernandez Bernal	Y	Y	Spain	M			
9	Peio Ifurriugarro	Y	Y	Spain	M			
10	Athanasia Nikolaou	Y	Y	Germany	F			
11	Miriam Cisneros	Y	Y	Belgium	F			
12	iñaki	Y	Y	Spain	M			
13	Jorge Pla Garcia	Y	Y	Spain	M			
14	Diogo Quirino	N	Y	Portugal	M			
15	Vasco Silva	N	Y	Portugal	M			
16	Constança Freire	N	Y	Portugal				
17	Ruben Gonçaves	Y	Y	Portugal	M			
18	Miguel Silva	Y	Y	Portugal	M			
19	Jose Silva	Y	Y	Portugal	M			
20	Jose Ribeiro	Y	Y	Portugal	M			
21	Hernando Valido	Y	Y	Portugal	M			
22	Daniela Espadinha	Y	Y	Portugal	F			
23	Francisco Brasil	Y	Y	Portugal	M			
24	Claudia Bento	Y	Y	Portugal	F			
25	Joao Dias	Y	Y	Portugal	M			
26	Therese Encrenaz	Y	Y	France	F	Y	Invited speakers	
27	Agustin sanchez Lavega	Y	Y	Spain	M	Y		
28	Santiago Perez Hoyos	Y	Y	Spain	M	Y		
29	Arianna Piccialli	Y	Y	Belgium	F	Y		
30	Alejandro Cardesin	Y	Y	Spain	M	Y		
31	Emmanuel Marcq	Y	Y	France	M	Y		
32	Peter Read	Y	Y	UK	M	Y		
33	Thomas Widemann			France	M	Y		
34	João Mendonça	Y	Y	Danimark	M	Y		
35	Pedro Miranda	Y	Y	Portugal	M	Y		
36	Jorge H. Martins	Y	Y	Portugal	M	Y		
37	Aymeric Spiga	Y	Y	France	M	Y		
38	Olivier Demangeoun	Y	Y	Portugal	M			
39	Gabriella Gilli	Y	Y	Portugal				
40	Pedro Machado	Y	Y	Portugal				

## Statistics:

S-SAIL was held in Lisbon, Portugal on June 2019.

Total number of participants: 40 persons

Number of participants of Inclusiveness states: 17

Number of female participants: 12

Number of male participants: 28

Number of early career scientists: 23

Participants from Industry: 0

Amateur Participants: 0

Participants from outside Europe: 0

# List of abstracts:

fx	Title			
	A	B	C	D
1	<b>Title</b>	<b>Author</b>	<b>Session</b>	<b>Talk/ Poster</b>
2	Jupiter and Saturn meteorological phenomena	Agustin S. Lavega	Cloud & Dynamics	invited
3	The red chromophore on Jupiter: the case of the North Temperate Belt	Santiago P. Hoyos	Cloud & Dynamics	Invited
4	Akatsuki (cloud-tracking) and TNG/HARPS-N (Doppler velocimetry) coordinated wind	Ruben Goncalves	Cloud & Dynamics	Talk
5	A convective disturbance in Jupiter's South Temperate Belt	P. Iñurrigarro	Cloud & Dynamics	Talk
6	Atmospheric Science with the Visual Monitoring Camera onboard Mars Express: recent	J. Hernandez-Bernal	Cloud & Dynamics	Talk
7	Meridional and Zonal winds at Venus' atmosphere from Cloud tracking, Doppler techn	Pedro Machado	Cloud & Dynamics	Invited
8	Adaptation to infrared of Doppler Velocimetry applied to Saturn with CARMENES	Miguel Silva	Cloud & Dynamics	Talk
9				
10	Composition and chemistry of the neutral atmosphere of Venus	Emmanuel Marcq	Atmospheric Characterization (SS)	Invited
11	Triton's atmospheric profiles from the October 5th 2017 stellar occultation	J. Oliveira	Atmospheric Characterization (SS)	Talk
12	Retrievals of ozone and aerosols on Mars using TGO/NOMAD UVIS solar occultations	Arianna Piccialli	Atmospheric Characterization (SS)	Invited
13	Uranus in Mid-Spring: Persistent Temperatures and Atmospheric Circulations Inferred	M. Roman	Atmospheric Characterization (SS)	Talk
14				
15	Modeling gas giants' atmospheric dynamics with a GCM	Aymeric Spiga	Atmospheric modeling	Invited
16	Studying Exoplanet Atmospheres using a Virtual-Lab	João Mendonça	Atmospheric modeling	Invited
17	Meteorological predictions for Jezero crater (NASA's Mars 2020 rover landing site) through Mars Regional Atmospheric Modeling System (MRAMS): a preview for MEDA instrument	Jorge P. Garcia	Atmospheric modeling	Talk
18	Gravity wave drag in the atmosphere of Earth	Pedro Miranda	Atmospheric waves	Invited
19	Characterising Atmospheric Gravity Waves on the lower and upper cloud bank using Venus Express VMC and VIRTIS images	Jose Silva	Atmospheric waves	Talk
20	Impact of non-orographic Gravity Waves on Mars and Venus atmosphere	G. Gilli	Atmospheric waves	Invited
21	A wave-driven semi-annual oscillation in Martian atmosphere reanalyses	Peter Read	Atmospheric waves	Invited
22	The inner solar system as observed by transit spectro-photometry	T. Encrenaz	Atmospheric Characterization (Exo)	Invited
23	Characterizing exoplanet atmospheres with reflected light: The CCF approach	J. Martins	Atmospheric Characterization (Exo)	Invited
24	Characterization of atmosphere of exoplanets using ESPRESSO/CHEOPS	Olivier Demangeon	Atmospheric Characterization (Exo)	Invited
25	Atmospheres around magma ocean world	E. Marcq	Atmospheric Characterization (Exo)	talk
26	Exoplanet detection and characterization	Nuno Santos	Atmospheric Characterization (Exo)	not coming
27	The terrestrial magma ocean solidification: Building an atmosphere under the young S	Athanasia Nikolaou	Atmospheric Characterization (Exo)	Talk
28	Methane production in worlds subjected to strong chondritic flux	Safoura Tambakouei	Atmospheric Characterization (Exo)	
29	Envision	Thomas Widemann	Present & Future mission	Invited
30	Recent Scientific Highlights from Mars: Mars Express and ExoMars 2016 Trace Gas Orb	Alejandro Cardesin	Present & Future mission	Invited
31	Contributions of amateur astronomers to the study of planetary atmospheres and the	R. Hueso	Present & Future mission	Talk
32	Characterization of MAJIS/JUICE VIS-NIR detectors	Miriam Cisneros-Gonzalez	Present & Future mission	Talk
33				
34				
35	<b>Posters</b>			
36	Cloud tracking technique and Akatsuki's space-based observations in ultraviolet	Daniela Espadinha		
37	Detection of Chemical Species in Titan's Atmosphere using High-Resolution Spectroscopy	Jose Ribeiro		
38	Atmospheric Gravity Waves: with Venus GCM simulations and Venus Express VMC data	Francisco Brasil		
39	Studying global dust storms on Mars using high resolution spectroscopy	Hermano Valido		
40	Dust devils and pressure drops on Gale crater during the third Martian Year of the MSL mission.	Iñaki Ordóñez-Etxeberria		