

Part A. PERSONAL INFORMATION

CV date	30th September 2019
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First and Family name	Ricardo Hueso		
Social Security, Passport, ID number	22746352L	Age	46
Researcher codes	WoS Researcher ID (*)	Z-3277-2019	
	SCOPUS Author ID(*)	22134841700	
	Open Researcher and Contributor ID (ORCID) **	0000-0003-0169-123X	

(*) At least one of these is mandatory

(**) Mandatory

A.1. Current position

Name of University/Institution	Universidad del País Vasco / Euskal Herriko Unibertsitatea (UPV/EHU)		
Department	Física Aplicada I		
Address and Country	Escuela de Ingeniería de Bilbao, Plaza Ingeniero Torres Quevedo, 1 48013 Bilbao, Spain		
Phone number	+34 94 601 4262	E-mail	ricardo.hueso@ehu.eus
Current position	Assistant profesor (titular de universidad)	From:	February 2011
Key words	Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Titan, Atmospheric Dynamics		

A.2. Education

Graduate/PhD	University	Year
Graduate in Physics	UPV/EHU	1996
PhD in Physics	UPV/EHU	2000

A.3. JCR articles, h Index, thesis supervised...

Since 2011: JCR Articles: 76. H index: 19 (Since 1998: JCR Articles: 128. H index: 31)

Since 2011: Q1 publications: >50 (Since 1998: Q1 publications: >70)

Average citations/year in (2016-2020): 259

Thesis supervised since January 2009: 3 (all co-supervised with Agustín Sánchez-Lavega)

“Sexenios de Investigación”: 3 (1997-2002, 2003-2008, 2009-2014)

Part B. CV SUMMARY (max. 3500 characters, including spaces)

I started my career with a Ph.D. at UPV/EHU in the atmosphere dynamics of Giant planets. I moved to the *Observatoire de Nice* in France for two years in which I explored problems related with the formation of protoplanetary disks and giant planets. I later came back to the UPV/EHU where I enjoyed several years of research contracts including a Ramón y Cajal position. In 2011 I obtained a permanent position as assistant professor (professor titular) and I currently hold the “acreditación para el cuerpo docente de catedráticos de Universidad en la rama de Ciencias”. I have developed a broad experience in the study of the atmospheres of Solar System planets from Terrestrial planets like Mars or Venus to the Giant and Icy planets. My work uses a combination of data from space missions, ground-based observations (including collaborations with amateur astronomers and with our instrument PlanetCam UPV/EHU at Calar Alto observatory), numerical models (some of them written by me) and theory. My main research lines are the following:

Atmospheric dynamics of Giant planets from Jupiter to Neptune. I have worked in analysis of data of all missions that have passed around Jupiter since Voyager 1 including the ongoing Juno mission. My main contributions are associated to the study of moist convection and their effect in the global dynamics of giant planets (i.e. Sánchez-Lavega et al. *Nature*, 2011; this publication was the cover in *Nature*). I have also been very involved in Saturn research with Cassini data and I also work in the study of Neptune’s major meteorological systems.



Impacts in Jupiter. I have led research on bolides in Jupiter discovered as flashes of light in video observations obtained by amateur astronomers. Six of these events have been discovered so far since the first one in 2010 (Hueso et al., *ApJL*, 2010, Hueso et al. *A&A*, 2013, 2018). I have also been very active in the study of larger impacts like the 500-m asteroid that impacted on Jupiter in 2009 (Sánchez-Lavega et al., *ApJL*, 2010) or the Shoemaker-Levy 9 comet in 1994.

Atmosphere of Venus. I have been co-I of the VIRTIS instrument on the Venus Express mission (2006-2015). I have co-directed two Ph.D. students in this field and I keep my work on Venus through ground-based observations and collaborations with the Akatsuki mission (JAXA).

Mars atmosphere. I am part of the team of the VMC instrument on Mars Express and I have worked extensively with data from the REMS instrument in the Mars Science Laboratory mission. I have co-directed a Ph.D. student whose thesis is based on analysis of REMS data. I am part of the MEDA team (science collaborator with access to proprietary data) in the **Mars 2020** mission (launch July 2020).

I have developed scientific software packages: **PLIA** (Planetary Laboratory for Image Analysis), a tool for the study of images from space platforms and **PLAYLIST** (PLANetary Y Lucky Images STACKer) the pipeline for analysis of data acquired by the instrument **PlanetCam UPV/EHU** at Calar Alto observatory.

I am co-I of a **James Webb Space Telescope Early Release Science** program to observe Jupiter in 2021 (ERS1373, PI Imke de Pater, 26 hours granted) where I lead the observations of Jupiter's atmosphere with the NIRCAM instrument. I also participate in the **ESA's JUICE mission to Jupiter** (launch in 2022) as part of the team of the JANUS camera. I am also coauthor of two white papers for **ESA's Voyage 2050** detailing the scientific interest of missions to Uranus and Neptune.

Part C. RELEVANT MERITS

C.1. Publications (including books)

1. Sanchez-Lavega, R. Hueso, et al. The Rich Dynamics of Jupiter's Great Red Spot from JunoCam: Juno Images. *The Astronomical Journal*, **156**:162 (9 pp) (2018). Highlighted by the American Astronomical Association in *NOVA's Research Highlight* on September 26th, 2018.
2. R. Hueso, et al. Small impacts in the giant planet Jupiter. *A&A*, **617**, A68, 13pp (2018). This paper appeared as a *research highlight* in *Nature* in September 28th, 2018.
3. Ordoñez-Etxeberria, R. Hueso, A. Sánchez-Lavega. A systematic search of sudden pressure drops on Gale crater during two Martian years derived from MSL/REMS data. *Icarus*, **299**, 308-330 (2018).
4. R. Hueso et al. (34/1). Neptune long-lived atmospheric features in 2013-2015 from small (28-cm) to large (10-m) telescopes. *Icarus*, **295**, 89-109 (2017).
5. J. Peralta, R. Hueso, A. Sánchez-Lavega, et al., Stationary waves and slowly moving features in the night upper clouds of Venus. *Nature Astronomy*, **1**, id. 0187 (2017).
6. R. Hueso et al. Jupiter cloud morphology and zonal winds from ground-based observations before and during Juno first perijove. *Geophys. Res. Lett.*, **44** (2017).
7. Garate-Lopez, I.; Hueso, R. et al., A chaotic long-lived vortex at the southern pole of Venus, *Nature Geoscience*, **6**, 254-257 (2013).
8. R. Hueso, J. Peralta, A. Sánchez-Lavega, Assessing the long-term variability of Venus winds at cloud level from VIRTIS-Venus Express. *Icarus*, **217**, 585-598 (2012).
9. Sánchez-Lavega, T. del Río-Gaztelurrutia, R. Hueso et al. Deep winds beneath Saturn's upper clouds from a seasonal long-lived planetary-scale storm, *Nature* **475**, 71-74 (2011). **Cover of the Journal on July 7th 2011.**



10. **R. Hueso**, et al., First Earth-based detection of a Superbolide on Jupiter, *Astrophys. J. Lett.*, **721**, L129-L133 (2010).

C.2. Research projects and grants

1. PROJECT NAME: Europlanet 2024 Research Infrastructure

REFERENCE: Grant Agreement under negotiation. Project granted but not yet started

FUNDING AGENCY: European Commission (H2020)

DATES: Starts: February 2020. Ends: January 2024

PRINCIPAL INVESTIGATOR: Nigel Mason (University of Kent)

PROJECT BUDGET: 10,000,000.00 EUR

COORDINATOR UPV/EHU: Ricardo Hueso | BUDGET UPV/EHU; 82,850.00 EUR

NUMBER OF INSTITUTIONS: 56 | NUMBER OF UPV/EHU researchers: 4

2. PROJECT NAME: Grupo de Ciencias Planetarias

REFERENCE: IT1366-19

FUNDING AGENCY: Gobierno Vasco (Convocatoria Grupos de Investigación)

DATES: Starts: 2019 Ends: 2021

PRINCIPAL INVESTIGATOR: Agustín Sánchez Lavega

PROJECT BUDGET: 245,700 EUR

NUMBER OF RESEARCHERS IN THE PROJECT: 10

3. PROJECT NAME: Scientific support for Mars Express Visual Monitoring Camera

FUNDING AGENCY: European Space Agency

DATES: Starts: 01 November 2016 Ends: 30 October 2018

PRINCIPAL INVESTIGATOR: Teresa del Río Gaztelurrutia

PROJECT BUDGET: 95,000 EUR

NUMBER OF RESEARCHERS IN THE PROJECT: 3

4. PROJECT NAME: Dinámica, nubes y aerosoles en atmósferas planetarias

REFERENCE: Referencia: AYA2015-65041-P

FUNDING AGENCY: Ministerio de Economía y Competitividad, Plan Nacional de Investigación

DATES: Starts: January 2016 Ends: December 2019

PRINCIPAL INVESTIGATOR: Agustín Sánchez Lavega and **Ricardo Hueso (co-PI)**

PROJECT BUDGET: 154,800 EUR

NUMBER OF RESEARCHERS IN THE PROJECT: 8

5. PROJECT NAME: Europlanet 2020 Research Infrastructure

REFERENCE: Proposal N°: 654208 , acronym: EPN2020-RI-RIA

FUNDING AGENCY: European Commission (H2020)

DATES: Starts: September 2015 Ends: September 2019

PRINCIPAL INVESTIGATOR: Nigel Mason (Open University, UK)

PROJECT BUDGET: 9,945,361.00 EUR

COORDINATOR UPV/EHU: Ricardo Hueso | BUDGET UPV/EHU; 93,000.00 EUR

NUMBER OF INSTITUTIONS: 33 | NUMBER OF RESEARCHERS UPV/EHU: 3

6. PROJECT NAME: Grupo de Ciencias Planetarias (GCP: Estudio de las atmósferas planetarias, investigación sistema solar y desarrollo de instrumentación astronómica y espacial).

REFERENCE: IT765-13

FUNDING AGENCY: Gobierno Vasco

DATES: Starts: January 2013 Ends: December 2018

PRINCIPAL INVESTIGATOR: Agustín Sánchez Lavega

PROJECT BUDGET: 343,599.00 EUR

NUMBER OF RESEARCHERS IN THE PROJECT: 9

7. PROJECT NAME: Dinámica, Meteorología y nubes en las atmósferas de Venus y planetas gigantes

REFERENCE: AYA2012-36666



FUNDING AGENCY: Ministerio de Economía y Competitividad, Plan Nacional de Investigación
DATES: Starts: January 2013 Ends: December 2015
PRINCIPAL INVESTIGATOR: Agustín Sánchez Lavega
PROJECT BUDGET: 228,150.00 EUR
NUMBER OF RESEARCHERS IN THE PROJECT: 10.5

C.3. Contracts

None.

C.4. Patents

None.

C.5 Institutional responsibilities

- **2020:** Appointed as a member of the Solar System Exploration Working Group of the European Space Agency (SSEWG-ESA). My appointment will develop over 3 years in 2020-2022.
- **2019:** Member of the Executive Board of the Europlanet Society (>430 members). The Europlanet Society (<https://www.europlanet-society.org/>) first Executive Board was elected in Sept. 2019.

C.6. Prizes

2018: “Premio Javier Gorosabel de Colaboración PRO-AM en Astrofísica”. Prize awarded by the program commission of the Spanish Astronomical Association (SEA) and the Federation of Spanish Astronomical Associations (FAAE). The prize was given to a team made by R. Hueso, A. Sánchez-Lavega, M. Delcroix and J. M. Gómez-Forrellad.

C.7. Teaching related with the research line

Teaching “Solar System Physics” at Master level in the Master in Space Science and Technology at UPV/EHU since 2009. Since 2009 director/advisor of 9 master thesis and one final degree project.

C.8. Others

- Member of the Spanish evaluation committees for: (1) Evaluation of research projects: **Plan nacional Astronomía y Astrofísica**, MINECO (2015), **Plan Nacional del Espacio**, MINECO (2016). (2) Evaluation of the following programs: **Formación postdoctoral de investigadores** (MINECO, 2014), **Ramón y Cajal** (MINECO, 2014), **Juan de la Cierva** (MINECO, 2018).
- Member of the scientific panel for the **DISCOVERY** program (2015). The Discovery program funds Solar System space missions with a top Budget of 450 M\$. A mission is selected every 2-4 years. Examples of Discovery class missions are the Kepler Space Telescope (exoplanets), Messenger (Mercury) or New Horizons (Pluto).
- Member of the scientific panel of the **HCERES** (*Haute Conseil d'évaluation de la Recherche et de l'Enseignement Supérieur*) for the external evaluation of the *Laboratoire de Meteorologie Dynamique* in France (2017). This is a 5 years review of the laboratory, which encompasses about 180 persons distributed over various universities in Ile de France (Paris, France).
- External reviewer for **NASA funded projects** (particularly under the programs Outer Planets Research, 2013, 2014; Cassini Data Analysis and Participating Science Program; 2014 and Solar System Workings; 2014-2015), for French projects funded by the **Agence National de la Recherche** (2012, 2015) and the **Italian Space Agency** (Agenzia Spaziale Italiana, ASI) in 2019.

Outreach: 30 outreach conferences since January 2009 including participation in different events of the Naukas platform (the most popular event in scientific outreach in Spain with several hundreds of people in the public in each event). About 10 outreach articles since 2009 including: “Tormentas de metano en Titán”, R. Hueso, *Investigación y ciencia* (December 2010). 3 years of regular collaborations (weekly or bi-weekly) in the radio program “**Graffiti**” in *Radio Euskadi* (reaching the Basque Country) in a space of 25 minutes for outreach in astronomy. The number of programs from 2010 to 2013 was 108.