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Raffaele Reda

Date of birth: 24/04/1994 | **Nationality:** Italian | **Gender:** Male |

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EDUCATION AND TRAINING

11/2019 – CURRENT

PHD STUDENT IN "ASTRONOMY, ASTROPHYSICS AND SPACE SCIENCE" – Joint program between University of Rome Tor Vergata, University of Rome La Sapienza and INAF

• Thesis: "A synergic strategy to characterize the habitability conditions of exoplanets hosted by Solar-type stars"
• Supervisors: Dr. Luca Giovannelli, Co-supervised: Dr. Maria Pia Di Mauro and Prof. Francesco Berrilli

01/2017 – 04/2019 – Rende (CS), Italy

MASTER'S DEGREE IN PHYSICS – Department of Physics, University of Calabria

• Curriculum: Astrophysics and Geosphysics
• Thesis: "A model for Earth's climate sensitivity to solar irradiance variations"
• Supervisors: Prof. Fabio Lepreti, Prof. Leonardo Primavera, Dr. Antonio Vecchio.
• Keywords: Climate models, Solar activity, TSI forcing, Earth's climate, Climate feedbacks.
• Abstract: Earth's climate shows variability due also to natural changes, for example connected to variable solar magnetic activity. The aim of this work is to quantify the effect of the solar forcing on the Earth's climate. To this scope an energy balance climate model, including atmosphere and two ocean mixed layers, and a total solar irradiance reconstruction for the last 9300 years, to take into account the solar activity variability, have been used. To evaluate the impact of the TSI forcing on Earth's climate numerical simulations have been performed, showing that solar forcing alone cannot produce significant climate variations.

Address Rende (CS), Italy | **Final grade** 110/110 cum laude

09/2013 – 12/2016 – Rende (CS), Italy

BACHELOR'S DEGREE IN PHYSICS – Department of Physics, University of Calabria

• Thesis: "Study of simplified climate models"
• Supervisor: Prof. Fabio Lepreti.
• Keywords: Climate models, Greenhouse effect, Vegetation, Climate dynamic.
• Abstract: In this work simple energy balance climate models including the atmosphere and a representation of greenhouse effect have been studied. Moreover, a more complicated climate model with the presence of vegetation, oceans, ice and lands has been studied. For this model, the equilibrium solutions and their stability have been examinated, and Earth's climate evolution has been investigated performing numerical simulations.

Address Rende (CS), Italy | **Final grade** 110/110

2016 – Rende (CS), Italy

INTERNSHIP – Department of Physics, University of Calabria

Radiative equilibrium of the Earth-atmosphere system: simplified climate models and greenhouse effect.

Address Rende (CS), Italy

09/2008 – 07/2013 – Cosenza (CS), Italy

HIGH SCHOOL "LICEO SCIENTIFICO" – Liceo Scientifico Statale "E. Fermi"

Mark: 89/100

Address Cosenza (CS), Italy

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	B2	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

My Digital Skills

Good skills in numerical codes implementation with C, C++, Fortran 90 and Python languages. | Knowledge of the graphic display program Gnuplot. | Good capability to produce documents through the using of Latex. | Knowledge of the operative systems Linux and Windows. | Good knowledge of the Office software (Office /OpenOffice/ LibreOffice suites, Adobe suite, GIMP).

PUBLICATIONS

Peer reviewed publications

• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, P. Giobbi and V. Penza, *Long term correlation of solar activity proxy and solar wind dynamic pressure in the last five solar cycles*, Il Nuovo Cimento 44 C, 120 (2021), http://dx.doi.org/10.1393/ncc/i2021-21120-8.
• **R. Reda**, M.P. Di Mauro, L. Giovannelli, T. Alberti, F. Berrilli and E. Corsaro. *A synergic strategy to characterize the habitability conditions of exoplanets hosted by solar-type stars*, Frontiers in Astronomy and Space Sciences, 9, (2022), https://doi.org/10.3389/fspas.2022.909268.
• L. Giovannelli, F. Berrilli, ... , **R. Reda** et al., *Sun CubE OnE: A multi-wavelength synoptic solar micro satellite*, Advances in Space Research, https://doi.org/10.1016/j.asr.2022.09.044.
• **R. Reda**, L. Giovannelli, T. Alberti, *On the time lag between solar wind dynamic parameters and solar activity UV proxies*, Advances in Space Research, https://doi.org/10.1016/j.asr.2022.10.011.
• M.P. Di Mauro, **R. Reda**, S. Mathur, R.A. García, D.L. Buzasi et al., *On the characterization of GJ 504: a magnetically active planet-host star observed by TESS*, in press The Astrophysical Journal, https://arxiv.org/abs/2209.12752.
• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, L. Bertello, D. Del Moro, M.P. Di Mauro, P. Giobbi and V. Penza, *The exoplanetary magnerosphere extension in Sun-like stars based on solar wind - solar UV relation*, submitted to MNRAS, https://arxiv.org/abs/2203.01554.

DRIVING LICENCE

Driving Licence: B

ORGANISATIONAL SKILLS

Organisational skills

Good capability to work in team and to exchange idea in a constructive way.

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

Good communication skills strengthened through presentations during master's degree courses and conference talks during PhD program.

TALKS

Talks

• **R. Reda**, F. Lepreti, L. Primavera, A. Vecchio, *"A model for Earth's climate sensitivity to solar irradiance variations",* 4th Dynamo Thinkshop, University of Rome "Tor Vergata", November 25 - 26 2019, Rome, Italy.
• **R. Reda**, T. Alberti, F. Berrilli, P. Giobbi, L. Giovannelli, V. Penza, *"Long term variations in the correlation between solar cycle proxies and solar wind parameters"*, 106° Congresso Società Italiana di Fisica (SIF), September 14-18 2020, Online Conference.
• **R. Reda**, L. Giovannelli, F. Berrilli, M.P. Di Mauro, *"A synergic strategy to identify habitable exoplanets"*, AASS PhD workshop 2020, September 15-18 2020, Online workshop.
• **R. Reda**, T. Alberti, F. Berrilli, P. Giobbi, L. Giovannelli, V. Penza. *"Long term correlations in solar cycle proxies and solar wind parameters"*, Cool Stars 20.5, March 2-4 2021, Online conference, (Pico).
• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, L. Bertello, D. Del Moro, M.P. Di Mauro, P. Giobbi, V. Penza, *"Co rrelation analysis for time series with similar periods: the solar activity - solar wind case"*, 11th Young Researcher Meeting, September 6-9 2021, Online conference.
• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, L. Bertello, D. Del Moro, M.P. Di Mauro, P. Giobbi, V. Penza, *"Lo ng-term correlations in solar proxies and solar wind parameters"*, 16th European Solar Physics Meeting, September 6-10 2021, Online conference.
• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, P. Giobbi, V. Penza, *"Long-term solar wind reconstruction via geomagnetic indices and Ca II K Index"*, 107° Congresso Società Italiana di Fisica (SIF), September 13-17 2021, Online conference.
• **R. Reda**, L. Giovannelli, F. Berrilli, M.P. Di Mauro, *"Exoplanet environment and habitability: a synergic strategy based on solar activity-solar wind connection and asteroseismology"*, AASS PhD workshop 2021, September 13-17 2021, Rome, Italy.
• **R. Reda**, L. Giovannelli, F. Berrilli, M.P. Di Mauro, *"The star-planet interaction by combining asteroseismic and space weather techniques",* PLATO mission conference 2021, October 11-15 2021, Online conference, (1-minute talk).
• **R. Reda**, L. Giovannelli, T. Alberti, F. Berrilli, L. Bertello, D. Del Moro, M.P. Di Mauro, P. Giobbi, V. Penza, *"Th e exoplanetary magnetosphere extension in Sun-like stars based on the solar wind - solar UV emission"*, EGU 2022 Meeting, May 23-27 2022, Vienna, Austria.
• **R. Reda**, L. Giovannelli, F. Berrilli, M.P. Di Mauro, *"A synergic strategy to characterize the habitability conditions of exoplanets hosted by Solar-type stars"*, AASS PhD workshop 2022, September 22-27 2022, Rome, Italy.

SCIENTIFIC SOCIETY MEMBERSHIP

Scientific Society Membership

• Italian Society of Physics (SIF)
• Space Weather Italian COmmunity (SWICO)
• TESS Asteroseismic Science Consortium (TASC)

AWARDS

Awards

Talk mentioned for the best communications and awarded with the publication on Il Nuovo Cimento - "Long term variations in the correlation between solar cycle proxies and solar wind parameters" at 106° Congresso Società Italiana di Fisica (SIF).

SCHOOLS

01/02/2021 – 05/02/2021

Web School: Dynamical Systems and Machine Learning Approaches to Sun-Earth Relations

International School of Space Science (ISSS)