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Four exciting years have past, during which I have gathered more knowledge and experience than I could ever have imagined. During this trip of knowledge there are many people that have contributed each on his own way to the completion of this dissertation.

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Throughout my PhD I have been working in SRON in Utrecht, in the Earth and Planetary Sciences division. Since most of my work concerns Earth–like exoplanets my working in an environment with experts on Earth’s atmosphere has helped me a lot and from all the people here I have gained a lot of useful knowledge and experience that I have used during my PhD. So, to all of EPS: thank you!
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Theodora Karalidi was born on August 31st, 1983 in Amarousio (Marousi) of Attiki, Greece. In 1989 she started her education at the 15th primary school of Nea Smirni, Athens, Greece. In 1995 she attended the 7th secondary school of Nea Smirni and in 1996 she moved to the 5th secondary school of Nea Smirni. In 1998 she proceeded to the 5th lyceum of Nea Smirni, at which she successfully took the Panhellenic exams in 2001 to enter the Physics department of the University of Athens.

Following a course on Cosmic Rays, she started a project on the cosmic ray modulation during the 23rd solar cycle in collaboration with prof. dr. H. (Helen) Mavromichalaki and E. (Vagelis) Paouris. This work resulted in a publication in Solar Physics (Mavromichalaki et al., 2007). In 2005 she visited the Astronomical Institute of Utrecht University with a Leonardo Da Vinci scholarship. There she worked for three months with prof. dr. H.J.G.L.M. (Henny) Lamers on a study of The mass function of star clusters in our Galaxy and M81, the mass of the most massive cluster, after which she returned to the University of Athens. She received her Bachelor’s degree in Physics in 2006 with a thesis on The Luminosity and Mass Functions of Star Clusters in the Milky Way galaxy and the Magellanic Clouds, which was performed under supervision of prof. dr. M. (Mary) Kontizas.

In 2006 she went back to Utrecht University to continue her studies in the Master’s program of the Astronomical Institute. She received her Master’s degree in Astrophysics in 2008 with a thesis on Polarimetry with SPEX – the Spectropolarimeter for Planetary Exploration under supervision of dr. ir. F. (Frans) Snik, dr. D. M. (Daphne) Stam and prof. dr. C. U. (Christoph) Keller. During this research she performed both a theoretical and a laboratory study of SPEX.

In 2008 she started her PhD research in the group of Daphne Stam at SRON Netherlands Institute for Space Research, co-supervised by Christoph Keller (Leiden University). The results of this research are presented in this book. During this research she assisted teaching the Master’s course Planets and Exoplanets of Daphne Stam and Christoph Keller at Utrecht University. She presented her work at conferences and workshops in Paris, Barcelona, Exeter, Flagstaff, Heidelberg, Madrid, Dalsen, Groningen and Amsterdam. She will defend her thesis on April 23rd, 2013.