

Fecha del CVA	01/07/2022
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## Parte A. DATOS PERSONALES

Nombre	Hector		
Apellidos	Nieto Solana		
Sexo	No Contesta	Fecha de Nacimiento	
DNI/NIE/Pasaporte			
URL Web	<a href="https://github.com/hectornieto">https://github.com/hectornieto</a>		
Dirección Email			
Open Researcher and Contributor ID (ORCID)	0000-0003-4250-6424		

### A.1. Situación profesional actual

Puesto	Científico Titular		
Fecha inicio	2021		
Organismo / Institución	Consejo Superior de Investigaciones Científicas		
Departamento / Centro			
País	Teléfono	(+34) 913333125	
Palabras clave			

### A.2. Situación profesional anterior (incluye interrupciones en la carrera investigadora - indicar meses totales, según texto convocatoria-)

Periodo	Puesto / Institución / País
2018 - 2021	Doctor Industrial Torres Quevedo / Complutum Tecnologías de la Información Geográfica SL
2017 - 2018	doc INIA / INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTARIES (IRTA) / España
2014 - 2016	Postdoc / Consejo Superior de Investigaciones Científicas / España
2013 - 2014	Postdoc / University of Copenhagen KU / Dinamarca
2012 - 2013	Remote Sensing and GIS consultant / DHI-GRAS A/S / Dinamarca
2009 - 2012	Postdoc / University of Copenhagen KU / Dinamarca
2005 - 2009	Predoc FPI / Universidad de Alcalá / España
2003 - 2004	Stagiaire / CEMAGREF / Francia

### A.3. Formación académica

Grado/Master/Tesis	Universidad / País	Año
Doctorado en Cartografía, SIG y teledetección	Universidad de Alcalá / España	2010
Ingeniero de Montes Especialidad Silvopascicultura	Universidad Politécnica de Madrid / España	2004

## Parte B. RESUMEN DEL CV

Hector Nieto has recently become Tenured Scientist at ICA-CSIC. Right before then he was awarded a Torres Quevedo fellowship at COMPLUTIG SL for conducting industrial research and technology transfer in remote sensing and agriculture. At COMPLUTIG he promoted R +D+i at the industry leading an Operative Innovation Group (AGROTIG) and participating in another one (SIEGA) both in collaboration with the agricultural unions (ASAJA) and regional agricultural research centers. As part of this job, he conducted capacity building activities to technicians in precision agriculture and remote sensing, as well as demonstration and dissemination activities to farmers and downstream companies. He has also been WP leader in international projects, ET4FAO and SENET both funded by the European Space Agency and lead by DHI, to evaluate Copernicus data for near-real time monitoring of evapotranspiration

and water use at different spatial and temporal scales. These two projects have resulted in a freely open source tool for producing ET maps with Sentinel images (<https://www.esa-sen4et.org/news6>) and demonstrated to FAO the utility of Copernicus data for water accounting (<https://et4fao.dhigroup.com/#/>).

From 2017-2019 he was part of the Efficient Use of Water program in Agriculture at IRTA thanks to a INIA-Doc grant where he focused on precision irrigation using thermal and multispectral airborne and satellite imagery. Between 2014 and 2016 he received a Marie Curie COFUND Talenta fellowship to conduct a postdoc at IAS-CSIC and USDA, working on the evapotranspiration modelling in heterogenous crop (vineyards) and tree-grass canopies (dehesas) using very high spatial resolution imagery. In these years he adapted an energy balance model (TSEB) to accommodate for specific processes occurring in row and woody crops such as differential radiation transmission or turbulent transport of water and heat between soil and the canopy. As a result of these activities, and besides of the scientific publications, he delivers the whole TSEB modelling framework through an open source repository (<https://github.com/hectornieto/pyTSEB>, DOI:10.5281/zenodo.594732) that is widely used by both the scientific and industrial communities.

During the period 2009-2014 he was a postdoctoral researcher at the University of Copenhagen at the Hydrology Observatory of Denmark working on the estimates of evapotranspiration using satellite remote sensing at different scales. He evaluated the use of multi-angular and multi-temporal thermal infrared data for the estimation of sensible and latent heat fluxes using resistance energy balance models for catchment hydrology. One of the result of these activities, he and his colleagues published in 2016 one of the first papers that used and validated unmanned aerial vehicles to estimate evapotranspiration.

His research has been focused in developing new knowledge in evapotranspiration modelling, focused on remote sensing applications at different scales from proximal sensing to airborne and satellite platforms. His H-index is 24 with more than 60 publications registered in Web of Science from which he has more than 1800 citations. Besides the dissemination to the scientific community he also shares his models/algorithms in public open-source repositories at <https://github.com/hectornieto>. Finally he has been co-supervisor of 4 graduated PhD students and is currently co-supervising another 2 PhD students. He participated as well in high-education teaching, at either BSc, MSc and PhD levels, and capacity building activities, for which he distributes teaching material using the latest technologies that combine open source repositories, interactive notebooks and containerized software (<https://mybinder.org/v2/gh/hectornieto/curso-WUE/HEAD>).

## Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES

### C.1. Publicaciones más importantes en libros y revistas con “peer review” y conferencias

AC: Autor de correspondencia; (n° x / n° y): posición firma solicitante / total autores. Si aplica, indique el número de citaciones

- 1 Artículo científico.** Burchard-Levine, V.; Nieto, H.; Riaño, D.; et al; Martín, M.P.2022. A remote sensing-based three-source energy balance model to improve global estimations of evapotranspiration in semi-arid tree-grass ecosystems *Global Change Biology*. John Wiley and Sons Inc. 28-4, pp.1493-1515. ISSN 13541013.
- 2 Artículo científico.** Burchard-Levine, V.; Nieto, H.; Kustas, W.P.; et al; Dokoozlian, N.2022. Application of a remote-sensing three-source energy balance model to improve evapotranspiration partitioning in vineyards *Irrigation Science*. Springer Science and Business Media Deutschland GmbH. ISSN 03427188.
- 3 Artículo científico.** Kustas, W.P.; Nieto, H.; Garcia-Tejera, O.; et al; Dokoozlian, N.2022. Impact of advection on two-source energy balance (TSEB) canopy transpiration parameterization for vineyards in the California Central Valley *Irrigation Science*. Springer Science and Business Media Deutschland GmbH. ISSN 03427188.

- 4 **Artículo científico.** Simpson, J.E.; Holman, F.H.; Nieto, H.; et al; Kaplan, J.O.2022. UAS-based high resolution mapping of evapotranspiration in a Mediterranean tree-grass ecosystem *Agricultural and Forest Meteorology*. Elsevier B.V.. 321. ISSN 01681923.
- 5 **Artículo científico.** Aguirre-García, S.-D.; Aranda-Barranco, S.; Nieto, H.; Serrano-Ortiz, P.; Sánchez-Cañete, E.-P.; Guerrero-Rascado, J.-L.2021. Modelling actual evapotranspiration using a two source energy balance model with Sentinel imagery in herbaceous-free and herbaceous-cover Mediterranean olive orchards *Agricultural and Forest Meteorology*. Elsevier B.V.. 311. ISSN 01681923.
- 6 **Artículo científico.** Bellvert, J.; Nieto, H.; Pelechá, A.; Jofre-Čekalović, C.; Zazurca, L.; Miarnau, X.2021. Remote Sensing Energy Balance Model for the Assessment of Crop Evapotranspiration and Water Status in an Almond Rootstock Collection *Frontiers in Plant Science*. Frontiers Media S.A.. 12. ISSN 1664462X.
- 7 **Artículo científico.** Burchard-Levine, V.; Nieto, H.; Riaño, D.; Migliavacca, M.; El-Madany, T.S.; Guzinski, R.; Carrara, A.; Martín, M.P.2021. The effect of pixel heterogeneity for remote sensing based retrievals of evapotranspiration in a semi-arid tree-grass ecosystem *Remote Sensing of Environment*. Elsevier Inc.. 260. ISSN 00344257.
- 8 **Artículo científico.** Guzinski, R.; Nieto, H.; Sanchez, J.M.; Lopez-Urrea, R.; Boujnah, D.M.; Boulet, G.2021. Utility of Copernicus-Based Inputs for Actual Evapotranspiration Modeling in Support of Sustainable Water Use in Agriculture *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. Institute of Electrical and Electronics Engineers Inc.. 14, pp.11466-11484. ISSN 19391404.
- 9 **Artículo científico.** K.R. Knipper; W.P. Kustas; M.C. Anderson; et al; ;. (4/). 2020. Using high-spatiotemporal thermal satellite ET retrievals to monitor water use over California vineyards of different climate, vine variety and trellis design *Agricultural Water Management*. 241. SCOPUS (1)
- 10 **Artículo científico.** C.K. Parry; H. Nieto; P. Guillevic; N. Agam; W.P. Kustas; J. Alfieri; L. McKee; A.J. McElrone. (2/). 2019. An intercomparison of radiation partitioning models in vineyard canopies *Irrigation Science*. 37-3, pp.239-252. SCOPUS (5)
- 11 **Artículo científico.** R. Guzinski; H. Nieto. (2/). 2019. Evaluating the feasibility of using Sentinel-2 and Sentinel-3 satellites for high-resolution evapotranspiration estimations *Remote Sensing of Environment*. 221, pp.157-172. SCOPUS (16)
- 12 **Artículo científico.** H. Nieto; W.P. Kustas; A. Torres-Rúa; et al;. (1/). 2019. Evaluation of TSEB turbulent fluxes using different methods for the retrieval of soil and canopy component temperatures from UAV thermal and multispectral imagery *Irrigation Science*. 37-3, pp.389-406. SCOPUS (17)
- 13 **Artículo científico.** K.R. Knipper; W.P. Kustas; M.C. Anderson; et al; ;. (10/ ). 2019. Evapotranspiration estimates derived using thermal-based satellite remote sensing and data fusion for irrigation management in California vineyards *Irrigation Science*. 37-3, pp.431-449. SCOPUS (24)
- 14 **Artículo científico.** H. Nieto; W.P. Kustas; J.G. Alfieri; et al;. (1/). 2019. Impact of different within-canopy wind attenuation formulations on modelling sensible heat flux using TSEB *Irrigation Science*. 37-3, pp.315-331. SCOPUS (10)
- 15 **Artículo científico.** W.P. Kustas; J.G. Alfieri; H. Nieto; T.G. Wilson; F. Gao; M.C. Anderson. (3/). 2019. Utility of the two-source energy balance (TSEB) model in vine and interrow flux partitioning over the growing season *Irrigation Science*. 37-3, pp.375-388. SCOPUS (14)
- 16 **Artículo científico.** T.S. El-Madany; M. Reichstein; O. Perez-Priego; et al; ;. (9/ ). 2018. Drivers of spatio-temporal variability of carbon dioxide and energy fluxes in a Mediterranean savanna ecosystem *Agricultural and Forest Meteorology*. 262, pp.258-278. SCOPUS (15)
- 17 **Artículo científico.** L. Song; S. Liu; W.P. Kustas; et al; ;. (4/). 2018. Monitoring and validating spatially and temporally continuous daily evaporation and transpiration at river basin scale *Remote Sensing of Environment*. 219, pp.72-88. SCOPUS (21)
- 18 **Artículo científico.** H. Hoffmann; R. Jensen; A. Thomsen; H. Nieto; J. Rasmussen; T. Friborg. (4/). 2016. Crop water stress maps for an entire growing season from visible and thermal UAV imagery *Biogeosciences*. 13-24, pp.6545-6563. SCOPUS (33)

- 19 **Artículo científico.** H. Hoffmann; H. Nieto; R. Jensen; R. Guzinski; P. Zarco-Tejada; T. Friborg. (2/). 2016. Estimating evaporation with thermal UAV data and two-source energy balance models Hydrology and Earth System Sciences. 20-2, pp.697-713. SCOPUS (59)
- 20 **Artículo científico.** W.P. Kustas; H. Nieto; L. Morillas; et al;. (2/). 2016. Revisiting the paper “Using radiometric surface temperature for surface energy flux estimation in Mediterranean drylands from a two-source perspective” Remote Sensing of Environment. 184, pp.645-653. SCOPUS (29)
- 21 **Artículo científico.** R. Guzinski; H. Nieto; S. Stisen; R. Fensholt. (2/ ). 2015. Inter-comparison of energy balance and hydrological models for land surface energy flux estimation over a whole river catchment Hydrology and Earth System Sciences. 19-4, pp.2017-2036. SCOPUS (8)
- 22 **Artículo científico.** R. Guzinski; H. Nieto; R. Jensen; G. Mendiguren. (2/). 2014. Remotely sensed land-surface energy fluxes at sub-field scale in heterogeneous agricultural landscape and coniferous plantation Biogeosciences. 11-18, pp.5021-5046. SCOPUS (13)
- 23 **Artículo científico.** A. de Tomás; H. Nieto; R. Guzinski; J. Salas; I. Sandholt; P. Berliner. (2/). 2014. Validation and scale dependencies of the triangle method for the evaporative fraction estimation over heterogeneous areas Remote Sensing of Environment. 152, pp.493-511. SCOPUS (30)
- 24 **Artículo científico.** R. Guzinski; M.C. Anderson; W.P. Kustas; H. Nieto; I. Sandholt. (4/ ). 2013. Using a thermal-based two source energy balance model with time-differencing to estimate surface energy fluxes with day-night MODIS observations Hydrology and Earth System Sciences. 17-7, pp.2809-2825. SCOPUS (31)

### C.3. Proyectos o líneas de investigación

- 1 **Proyecto.** MOIST, Managing and Optimizing Irrigation with Satellite Tools. Innovation Fund Denmark. Inge Sandholt. (INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTARIES (IRTA)). 01/09/2017-31/08/2020. 1.500.000 €. Coordinador.
- 2 **Proyecto.** SENET, Sentinels for Evapotranspiration. European Space Agency. Torsten Bondo. (INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTARIES (IRTA)). 01/10/2017-30/09/2019. 200.000 €. Coordinador. WP leader in Evapotranspiration Model Review WP leader in Evapotranspiration Modelo Prototyping
- 3 **Proyecto.** HOBE. Villum Fonden. Karsten Høgh Jensen. (University of Copenhagen). 2008-2018. Miembro de equipo. Estimation of evapotranspiration using mutiangular and multitemporal remote sensing data Collection of in situ data and deployment of instrumentation Configuration of an Unmanned Aerial Vehicle and i...
- 4 **Proyecto.** ESA-DUE GlobTemperature. European Space Agency. John Remedios. (University of Copenhagen). 19/11/2013-19/11/2016. 1.500.944 €.
- 5 **Proyecto.** TAPOST-203, UAV-ET. Marie Skłodowska-Curie actions; Agencia andaluza del conocimiento. Héctor Nieto Solana. (Instituto de Agricultura Sostenible). 01/10/2014-30/09/2016. 154.381 €. Investigador principal. I am the PI of this individual project. Estimation of net radiation partitioning in row crops Estimation of canopy and soil temperature for evapotranspiration modelling ESTimation of stomatal conduct...
- 6 **Contrato.** Grupo Operativo Supraautonómico Agrotig: SISTEMA DE AYUDA A LA TOMA DE DECISIONES EN CULTIVOS DE CEREAL MEDIANTE TELEDETECCIÓN MINISTERIO DE AGRICULTURA, PESCA Y ALIMENTACION. Héctor Nieto Solana. 15/07/2018-15/07/2020. 372.411,05 €.