Profile

Carl Talsma is a Research Scientist at Carbon Solutions LLC, a startup focusing on low-carbon energy Research & Development and Software & Services, including CO_2 capture and storage (CCS), energy storage, geothermal energy, and wind energy. His work focuses on energy & infrastructure modeling, including exploring optimization modeling of CCS infrastructure through simulation and development in SimCCS, an industry leading CO_2 capture and storage software. Other work involves the use of AI and machine learning methods to better understand climate impacts on watershed hydrology, extreme events, and other natural and engineered systems. Before working for Carbon Solutions LLC, Carl worked as a Research Technologist at Los Alamos National Laboratory where he focused on large scale watershed modeling and using machine learning approaches for analysis and understanding of hydrologic modeling output. Carl currently lives in Santa Fe, NM.

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Carl Talsma

Research Scientist | **Carbon Solutions LLC**

Education & Training

M.Sc. | **Water Resources Engineering** | **Oregon State University**
2016-2018 |

B.Sc. | **Environmental Engineering** | **Cornell University**
2011–2015 |

Professional Experience

Research Scientist | **Carbon Solutions LLC** | **2021–Present**
CO_2 capture and storage modeling

Research Technologist | **Los Alamos National Laboratory** | **2020–2021**
Supervised and unsupervised machine learning for feature extraction, predictive modeling, emulation of physical models, and data analysis | Software development for SmartTensors, a machine learning library in Julia.

Post Masters Researcher | **Los Alamos National Laboratory** | **2018–2021**
Large scale watershed modeling related to future climate projection and extreme events | Developed and built IoT enable meteorological sensor toward predictive machine learning of frost events at farm in Northern New Mexico

Graduate Research Assistant | **Oregon State University** | **2016–2018**
Validated remote sensing evapotranspiration models using globally dispersed field observations | *Assessed mode and parameter uncertainties using a monte-carlo style simulation* |

Awards

- SPOT Award | Los Alamos National Laboratory | **2019**
- Betty Minor Engineering Fellowship | Oregon State University | **2017**
- Irwin Jacobs Engineering Fellow | *Cornell University* | **2011-2015**

Publications

- Bennett, K., Talsma, C.J., Boero, R., 2021. Concurrent Changes in Hydroclimate Events in the Colorado River Basin. Water, 13(7), 978; *https://doi.org/10.3390/w13070978*
- Bennett, K., Miller, G., **Talsma, C.J.**, Jonko, A., Bruggernman, A., Atchley, A., Lavdie-Bulnes, A., Kwicklis, E., Middleton, R., 2019. Future Water Resources Shifts in the High Desrt Southwest of Northern New Mexico, USA. Jounral of Hydrology: Regional Studies.
- **Talsma, C.J**., Good, S.P., Jimenez, C., Martens, B., Fisher, J.B., Miralles, D.G., McCabe, M.F., Purdy, A.J., 2018.
Partitioning of evapotranspiration in remote sensing-based models. Agriculture & Forest Meteorology. doi:10.1016/j.agrformet.2018.05.010

PUBLICATIONS

- Vesselinov V., Middleton, R.S., Talsma, C.J., 2020. COVID-19: Spatiotemporal social data analytics and machine learning for pandemic exploration and forecasting. Los Alamos National Laboratory. LA-UR-21-23230
- Talsma, C.J., Good, S.P., Miralles, D.G., Martens, B., Fisher, J.B., Jimenex, C., Purdy, A.J., McCabe, M.F., 2018.
  Sensitivity and Partitioning in Remote Sensing Based Evapotranspiration Models. Graduate Thesis, Oregon State
  University, Corvallis, OR.
  http://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/k643b6454.
- Talsma, C.J., Good, S.P., Miralles, D.G., Martens, B., Fisher, J.B., Purdy, A.J., Jimenez, C., 2018. Sensitivity of
  transpiration, soil evaporation, and interception in remote sensing-based evapotranspiration models using a Monte Carlo analysis.
  Remote Sensing.

PROCEEDINGS & KEY PRESENTATIONS

- Talsma, C.J., Bennett, K., Urrugo-Blanco, J.R., 2019. Changes in Joint Climate Extremes in the Colorado River Basin. American Geophysical Union, Fall Meeting 2019, Abstr. #H51P-1701
- Talsma, C.J., Solader, K., Steinzig, M., Goddard, G., Sackos, J., 2019. Remote and Automated Monitoring in Agriculture to Devlop Site-Specific Mitigation and Crop Damage. U.S.-Mexico Border Water Sumit. Las Cruces, N.M. 24-25 April, 2019.
- Talsma, C.J.*, Good, S.P., Jimenez, C., Martens, B., Fisher, J., 2017. Evaluation of Evapotranspiration Partitioning in Remote Sensing Models. American Geophysical Union, Fall Meeting 2017, Abstr. #H11M-08.
- Talsma, C.J., Good, S.P., Jimenez, C., and Miralles, D. 2017. Evaluation of Evapotranspiration Partitioning in Satellite Driven Models. Pacific Northwest Water Research Symposium. Corvallis, Oregon. 6-7 March.