

# Tiziana Cherubini

[tiziana@hawaii.edu](mailto:tiziana@hawaii.edu)

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## SUMMARY

Research meteorologist with extensive expertise in Numerical Weather Prediction (NWP) modeling, specializing in the development, implementation, and optimization of weather prediction models. Skilled in the application of statistical techniques and machine learning to enhance model accuracy and performance. Proficient in managing and analyzing large datasets, ensuring data integrity and usability for a variety of meteorological research and operational needs. Experienced in high-performance computing (HPC) environments, including the design and execution of computationally intensive simulations. Good programming skills in languages such as Python and Fortran, with a focus on developing code for meteorological applications. Adept at collaborating with interdisciplinary teams.

## WORK EXPERIENCE

- 02/2003 - present    **Research Meteorologist** for the Maunakea Weather Center  
Duties and Responsibilities:
- Conduct research directed at improving meteorological forecasts in support of astronomical operations.
  - Run and maintain a custom adaptation of a numerical weather prediction system comprised of the Weather Research and Forecasting model (WRF) and its assimilation system WRF-DA.
  - Study, implement and validate an optical turbulence algorithm in support of optical turbulence prediction;
  - Oversee data gathering at the MKWC;
  - Oversee maintenance and improvements to the web-based weather data server that provides forecasts and weather data to the user community;
  - Supervise the MKWC lead forecaster and issue forecasts when the forecaster takes leaves.

**Affiliate Assistant Researcher** for the Dept. of Meteorology, University of Hawaii, Manoa.

- 11/2001 - 01/2003    **Post-doctoral fellowship** at the Dept. of Meteorology, University of Hawaii, Manoa, to work on developing and implementing data assimilation procedures for LIDAR data within the framework of the GroundWinds project (<http://groundwinds.sr.unh.edu>).

- 03/2001 - 06/2001 **Graduate Trainee** in the Operations Department at the European Centre for Medium-range Weather Forecast (ECMWF), with the following duties and responsibilities:
- Statistical validation of precipitation forecasts using non conventional observational data;
  - Implementation of the validation algorithms.

## EDUCATION

- 02/2001 **PhD in Geophysics/Meteorology**  
University of Genoa, Italy
- 07/1997 University of Rome, La Sapienza, Italy  
**Laurea degree in Physics, cum laude.**

## LANGUAGES

Fluent in Italian and English, good knowledge of French.

## LIST OF PUBLICATIONS

### *Books*

Businger, S. and T. Cherubini 2011: Seeing Clearly - The impact of Atmospheric Turbulence on the Propagation of Extraterrestrial Radiation. *VWB Publishing*.

### *Peer Reviewed*

Biscarini M., R. Nebuloni, L. Dossi, S. Di Fabio, P. Scaccia, T. Cherubini, C. Riva, and L. Luini, 2024: A Model-Chain to Generate Q/V Band Attenuation Time Series from Short-Term Numerical Weather Predictions at Continental Scale. *Transactions on Antennas and Propagation, IEEE*. [In print].

Cherubini, T., Antonelli, P., Businger, S., & Scaccia, P., 2023. Assimilation of Transformed Retrievals from satellite high-resolution infrared data over the Central Pacific Area. *Journal of Geophysical Research: Atmospheres*, 128, e2022JD038153. <https://doi.org/10.1029/2022JD038153>

Cherubini, T., R. Lyman, and S. Businger, 2022: Forecasting seeing for the Maunakea observatories with machine learning, *Monthly Notices of the Royal Astronomical Society*, **509**, Issue 1, 232–245, <https://doi.org/10.1093/mnras/stab2916>

Lyman R., T. Cherubini, S. Businger, 2020: Forecasting seeing for the Maunakea Observatories, *Monthly Notices of the Royal Astronomical Society*, Volume 496, Issue 4, 4734–4748, <https://doi.org/10.1093/mnras/staa1787>.

Holland, L., S. Businger, T. Elias, and T. Cherubini, 2020: Two Ensemble Approaches for Forecasting Sulfur Dioxide Concentrations from Kīlauea Volcano. *Wea. Forecasting*, **35**, 1923–1937, <https://doi.org/10.1175/WAF-D-19-0189.1>.

Antonelli, P., T. Cherubini, S. Businger, S. de Haan, P. Scaccia, and J. Moncet, 2020: Regional Assimilation System for Transformed Retrievals from Satellite High-Resolution Infrared Data. *J. Appl. Meteor. Climatol.*, **59**, 1171–1193, <https://doi.org/10.1175/JAMC-D-19-0203.1>.

Antonelli, P., T. Cherubini, R. Lyman, G. Giuliani, H. Revercomb, S. Businger, 2017: Regional Retrieval Processor for Direct Broadcast High-Resolution Infrared Data. *J. Appl. Meteor. Climatol.*, **56**, 1681–1705, <https://doi.org/10.1175/JAMC-D-16-0144.1>.

Businger, S., R. Huff, A. Pattantyus, K. Horton, A. Jeff Sutton, T. Elias and T. Cherubini, 2015: Observing and Forecasting Vog Dispersion from Kilauea Volcano, Hawaii. *Bulletin of Americal Meteorol. Soc.* 1667-1686.

Foster J., J. Kealy, T. Cherubini, S. Businger, Z. Lu, M. Murphy, 2013: The Utility of Atmospheric Analyses for the Mitigation of Artifacts in InSAR. *Journal of Geophysical Research: Solid Earth*. DOI: 10.1002/jgrb.50093.

Cherubini, T. and S. Businger 2013: Another Look at the Refractive Index Structure Function. *J. of Applied Meteorology and Climatology*, 52, 498-506

Cherubini, T., S. Businger 2011: An operational perspective for modeling optical turbulence. Included in the Book “Seeing Clearly: The impact of Atmospheric Turbulence on the Propagation of Extraterrestrial Radiation”. *VWB Publishing*

Cherubini, T., S. Businger, and R. Lyman, 2008: Modeling turbulence and seeing over Mauna Kea: Algorithm Refinement. *J. of Applied Meteorology and Climatology*, 47, 3033-3043.

Cherubini, T., S. Businger, and R. Lyman, and M. Chun, 2008: Modeling turbulence and seeing over Mauna Kea. *Journal of Applied Meteorology and Climatology*, 47, 1040-1155.

Foster, J., B. Brooks, T. Cherubini, C. Shacat, S. Businger, and C. L. Werner, 2006, Mitigating atmospheric noise for InSAR using a high resolution weather model, *Geophys. Res. Lett.*, 33, L16304, doi: 10.1029/2006GL026781.

Cherubini, T., S. Businger, C. Velden and R. Okasawara, 2006: The Impact of Satellite-Derived Atmospheric Motion Vectors on Mesoscale Forecasts over Hawaii. *Mon. Wea. Rev.*, 134, 2009-2020.

Ferretti, R., T. Paolucci, G. Giuliani, and T. Cherubini, 2003: Verification of high-resolution real-time forecasts over the Alpine region during the MAP SOP. *Q. J. R. Meteorological Soc.*, 129, 587-607.

Cherubini, T., A. Ghelli and F. Lalaurette, 2001: Verification of precipitation forecasts over the Alpine region using an high-density observing network. *Weather and Forecasting*, 17, 238-249.