

## Curriculum Vitae

### Esmail Malek

Certified Consulting Meteorologist  
Adjunct Professor - Embry-Riddle Aeronautical University  
Phone: 435-770-1253, E-Mail: [eemalek@gmail.com](mailto:eemalek@gmail.com)

## Education

PhD	Utah State University (USU), U.S.A., Biometeorology (Life & Weather),
MS	Pahlavi University, Iran, Irrigation Science,
BS	Tabriz University, Iran, Agricultural Engineering,

## Professional Experience

### *Certified Consulting Meteorologist*

#### *Embry-Riddle Aeronautical University*

2012-Present Adjunct Professor

#### *Utah State University:*

2008-2010 Associate Directors of the Utah Climate Center, Department of Plants, Soils, and Climate,

1993-2009 Associate Professor, Department of Plants, Soils, & Climate,

2003- 2006 Interim Director of Utah Climate Center (through 30 June, 2006),

1991-1993 Assistant Professor, Department of Plants, Soils, & Biometeorology,

1988-1991 Assistant Professor and Assistant Utah State Climatologist, Department of Plants, Soils, & Biometeorology,

1985-1988 Postdoctoral teaching and research Fellow, Department of Soil Science and Biometeorology,

#### *Shiraz University:*

1984-1985 Associate Professor and Head of the Irrigation Department,

1980-1984 Assistant Professor and Head of the Irrigation Department,

1977-1980 Assistant Professor the Irrigation Department,

## Professional Society Affiliations

American Geophysical Union (AGU)  
American Meteorological Society (AMS)  
Phi Kappa Phi

## Research Experience

- 1986-2011 Study of the atmospheric boundary layer including the crop water requirements [evapotranspiration (ET), ranging from playa to desert to agricultural ecosystems], crop response to climatic factors (crop canopy and aerodynamic resistance). Cooperation in the West Desert monitoring project and Elberta orchard frost control. Application of saline wastewater from electrical power plants for irrigation (in central Utah). Study of radiation and energy budget components at different ecosystem. Cloud parameterization. Application of climate models to evaluate surface runoff in local scales (watersheds).
- 1985-1986 Cooperation in the climatology study associated with the proposed Jordanelle reservoir.
- 1983-1985 Study of climatic water balance for arid and semi-arid zones. Evapotranspiration of arid and semi-arid regions, irrigation programming, evaluation of advection, and agroclimatic characteristics of dry areas.

## **Research Grants**

- 1987-2010 Project entitled "Irrigation season water balance at the Hunter and Huntington Research Farms" as PI. Funded by Utah Power (PacifiCorp) Company (\$997,864).
- 1997-1998 Project entitled "Atmospheric surface layer turbulence and environmental science test facility (as PI). Funded by NSF (\$265,000), plus three matching funds (\$170,000 each) from USU and University of Utah, and Dugway Proving Ground (Utah).
- 1995-1996 Project entitled "Evaluation of effective atmospheric emissivity, and parameterization of cloud at local scale." as PI. Funded by the USU Vice President for Research (\$30,000).
- 1993-1995 Project entitled "Mesoscale study of surface heat fluxes and boundary layer processes in a desert region" Gail Bingham was the principal PI, and I was one of the PIs. Funded by NASA (\$10,000).
- 1993-1995 Project entitled "Development of mountain climate generator and snowpack model for erosion predictions in the Western United States using WEPP." David Bowles was the principal PI, and I was one of the PIs. Funded by USFS (\$20,000).
- 1991-1992 Project entitled "Using the Bowen ratio-energy balance and Penman-Monteith methods to calculate the 20-minute period alfalfa canopy resistance during the growing season" as PI. Funded by Utah Agric Exp. Stat., USU (30,000.00).

## **Teaching Experience**

- 2012-Present (at Embry-Riddle Aeronautical University) Advanced Meteorology and Meteorology I
- 1985-2009 (at Utah State University) Biometeorology 530/630 (Introduction to Meteorology, 1987-1997), Biometeorology 660 (Biometeorology, 1985-1987), Biometeorology 635 (Physical Climatology, 1989-1997), Biometeorology 550/650 (Plant Microclimate, 1991), Biometeorology 6910 (Climate Modeling, 1989-present), Biometeorology 6300 (Principles of Weather and Climate, 1998), Biometeorology

6400/5400 (Introduction to Meteorology, 2000 - present). All the above-mentioned courses were taught for graduate and upper-division undergraduate students. Biometeorology 2000 (Atmosphere and Weather, 1998 and 2004 to present), Biometeorology/Geography 382 (Regional Climatology, 1989-1997), Biometeorology 4300 (General Meteorology, 1998).  
1977-1985 (at Shiraz University) Agricultural Meteorology, Irrigation Scheduling and Practices, Principles of Irrigation Science,

## **Graduate Students (Advisor and Committee Member)**

Advisor: 2 M.S.

Committee Member: 13 PhDs and 12 M.Sc.

Representative of Graduate School and Committee Member: 3 PhD and 7 M.Sc.

## **Chairperson**

- 1- Session 8: Evolution of Boundary Layer Structure and Surface Fluxes in Heterogeneous Surfaces. *21<sup>th</sup> Conf. on Agric. & For. Meteorol.*, Amer. Meteorol. Soc. San Diego, CA. March, 1994.
- 2- Session A53A: Microphysical Processes in Cloud-Resolving Models II. *2005 Joint Assembly: AGU, NABS, SEG, SPD/AAS*. New Orleans, LA, 23-27 May, 2005.
- 3- Session A54A: Atmospheric Sciences General Contributions on Climate and Weather. *2007 Joint Assembly: AGU, NABS, SEG, SPD/AAS*. Acapulco, Mexico, 22-25 May, 2007.
- 4- Session H: Dew Instrumentation and Collection. *4<sup>th</sup> Internat. Conf. on Fog, Fog Collection, and Dew*. Fogquest. La Serena, Chile, 22-27 July, 2007.
- 5- Session II: *2<sup>nd</sup> Internat. Conf. on Environ. Athens Instit. For Educ. And Res. (ATINER)*. Athens, Greece, 2-5 Aug., 2007.
- 6- Session on Energy Engineering, Economy, and Policy II (EEEP), the *2<sup>nd</sup> Internat. Mult. Conf. on Engin. Technol Innov.* Orlando, Florida, 10-13 Jul., 2009.
- 7- Session on Fog Collection, *5<sup>th</sup> Internat. Con. Fog, Fog Collection, Dew*. Meunster, Germany, 25-30 July, 2010.

## **Scientific Committee Member**

Conferences on Fog, Fog Collection and Dew.

## **Board member**

Certified Consulting Meteorologist (CCM) sponsored by the American Meteorological Society (2013-2016).

## **Consulting**

1987-2010. Irrigation Season Water Balance at the Castle Dale and Huntington Research Farms and Huntington Upper Field. *Cooperation with Utah Power (PacifiCorp) Company*.

- 2002-2004. Evaluation of radiation, energy, and water budget components over the playa of the west desert. Dugway Proving Ground, Dugway, Utah.
- 1998 (a). Comparison of evapotranspiration in sub-tropical region. *USDA-ARS, Miami, Florida*.
- 1998 (b). Application of saline wastewater for agricultural purposes. *Power Ministry (Water Division), Tehran, Iran*.
- 1990-1991. Determination of regional evapotranspiration from measurements of the Atmospheric Boundary Layer. *A study for the U.S. Geological Survey*. Other investigators: Hipps, (P.I.) and Wooldridge.
1987. Water research in Egypt. *Under contract RFTP 263-0132 between Egypt and the Consortium for International Development at Colorado State University*.
1985. Evaluation of the Climatic Impacts of Construction of the Proposed Jordanelle Reservoir. *A study conducted for the U.S. Bureau of Reclamation under POI. #6-PG-40-04160*. Study conducted through Utah State University Foundation. Other investigators: Ashcroft, Wooldridge, and Bingham.

## **Papers Delivered at Professional Meetings**

1. Biltoft, C., Klewicki, J., Malek, E., Price, R. And Turley, S. 1997. Development of an atmospheric surface layer turbulence and environmental test (SLTEST) facility. *The 12<sup>th</sup> Symposium on Boundary Layers and Turbulence*. Amer. Meteorol. Soc. and Can. Meteorol. Ocean. Soc. Vancouver, BC, Can., July 28-August 1, 1997.
2. Bingham, G. E. and Malek, E. 1993. Atmospheric radiation balance over alfalfa. *The Amer. Soc. Civil Eng. Conf. on Manage. of Irrig. and Drain. Sys.: Integ. Perspec.* Park City, Utah. July 1993.
3. Bingham, G. E., and Malek, E. 1992. A comparison of the calibration and response of pyrgeometer and net radiometer determined terrestrial energy measurements. *The NASA Third Annual IR Radiometric Sensor Calib. Symp.*, Logan, Utah. 14-17 Sep. 1992.
- 4- Gillies, R., Symanzik, J., Malek, E. and Moller, A. 2009. Linked Micromap Plots for Evaluating Trends in Multi-Pollutant Deposition. *National Atmos. Depos. Prog. 2009 meeting and Scientific Symposium*. Saratogo, NY. 6-9 Oct., 2009.
5. Malek, E. 1985 (a). Agro-meteorological characteristics of the Bajgah Valley. *The College on Soil Physics. Internat. Ctr for Theor. Phys.*, Trieste, Italy. Apr. - May 1985.
6. Malek, E. 1985 (b). Determination of the proper methods of estimating  $ET_p$  and evaluation of advection in the Bajgah area. *The Colloq. of Energy Flux at the Soil-Atmosph. Interf. Internat. Ctr for Theor. Phys.*, Trieste, Italy. Apr. - May 1985.
7. Malek, E. 1992. Continuous measurement of radiation and energy budget components and evaluation of the atmospheric emissivity in a mountainous semi-arid irrigated valley. *The Amer. Meteor. Soc. Sixth Conf. on Mount. Meteor.*, Portland, OR. Sep. -Oct. 1992.
8. Malek, E. 1993. An advanced instrumentation for the measurement of energy and water balances components. *IAMAP. IAHS '93 Joint International Meeting [the Sixth Sci. Assembl. of the Internat. Assoc. of Meteorol. and Atmosph. Phys. (IAMAP) and the Fourth Sci. Assembl. of*

- the Internat. Assoc. of Hydrol. Sci. (IAHS)*. Yokohama, Japan. July 1993.
9. Malek, E. 1994. Estimation of energy, momentum, and water fluxes in a semi-arid valley. *The XIX General Assembly of the European Geophys. Soc.*, Grenoble, France. April, 1994.
  10. Malek, E. 1995. An innovative method for using saline wastewater. *The Intern. Conf. on Meteorol. and Hydrol. Techn. and its Management*. Geneva, Switzerland. 22-26 May 1995.
  11. Malek, E. 1997 (a). Local-scale cloud study. *The 9<sup>th</sup> Conf. Atmospheric Radiation, Amer. Meteorol. Soc.*, Long Beach, CA, 2-7 Feb 1997.
  12. Malek, E. 1997 (b). Parameterization of cloud at local scale. *The European Geophysical Society XXII General Assembly*, Wien, Austria, 21-26 April 1997.
  13. Malek, E. 1998 (a). Cloud parameterization in a semi-arid valley. *The Sixth Internat. Conf. On Precip.: Predictability of Rainfall at the Various Scales.*, Mauna Lani Bay, Hawaii, U.S.A., June 29- July 1, 1998.
  14. Malek, E. 1998 (b). Detecting and quantifying dew in semi-arid irrigated and desert valleys. *The First Internat. Conf. On Fog and Fog Collection*. Vancouver, Canada, 20-24 July 1998.
  15. Malek, E. 1999 (a). A cloud scheme for the downscaled GCMs. *The AGU 1999 Spring Meeting*. Boston, MA, 1-4 June 1999.
  16. Malek, E. 1999 (b). Regional-scale surface water and energy fluxes in an inhomogeneous desert valley. *The Third Internat. Sci. Conf. on the Global Energy and Water Cycle*, Beijing, China, June 16- 19, 1999.
  17. Malek, E. 2000 (a). Measurement of the radiation balance components during snowy events. *The XXV European Geophys. Soc. Millennium Con.*, Nice, France 25-29 April 2000.
  18. Malek, E. 2000 (b). Winter time radiation and energy balance components and cloudiness in a mountainous valley. *The Ninth Conf. on Mountain Meteorol.* Aspen, Colorado, 7-11 Aug. 2000.
  19. Malek, E. 2001 (a). Differentiation of the atmospheric moisture collected by dew and fog. *Proceedings: The Second Internat. Conf. On Fog and Fog Collection*. St. John's, Newfoundland, Canada, 15-20 July 2001.
  20. Malek, E. 2001 (b). Dew effects on radiometry. *Proceedings: The Second Internat. Conf. On Fog and Fog Collection*. St. John's, Newfoundland, Canada, 15-20 July 2001.
  21. Malek, E. 2003 (a). On the Microclimate of a Desert Site. *VI Internat. Conf. on School, Popular Meteorological & Oceanographic Education*. Madrid, Spain. 7-11 July 2003.
  22. Malek, E. 2004(a). An algorithm for continuous evaluation of cloud base height, cloud base temperature, and cloud coverage at local scale. *The 14th Conf. Internat. Con. Clouds & Precip.* Bologna, Italy. 18-23 July 2004.
  24. Malek, E. 2004(b). What can be done with saline wastewater? Utah State University Water Initiative: *2004 Spring Runoff Conference Program*. Logan, UT, USU. 25-56 March 2004.
  25. Malek, E. 2005(a). Monitoring of cloud at local scale. *OSA Conf.-Fourier Transform Spectrometry/Hyperspectral Imaging and Sounding of the Environemnt*. Alexanria, VA, Jan.31 – Feb. 3, 2005.
  26. Malek, E. 2005(b). Validation of local-cloud model outputs with the GOES satellite imagery. *2005 Joint Assembly: AGU, NABS, SEG, SPD/AAS*. New Orleans, LA, 23-27 May, 2005.
  27. Malek, E. 2005(c). Nine years evaluation of radiation and energy fluxes in a semi-arid valley. *5<sup>th</sup> International Scientific Conference on the Global Energy and Water Cycle*. Costa Mesa,

- CA, 20-24 June, 2005.
28. Malek, E. 2006(a). Annual Water Balance at the West Desert Basin Playa. *USU Water Initiative 2006 Spring Runoff Con.* Logan, Utah 27-28 March, 2006.
  29. Malek, E. 2006(b). What can be done with the saline wastewater from electrical power plants? *IWA World Water Cong. & Exhib.* Beijing, China, 10-14 Sept., 2006.
  30. Malek, E. 2006(c). Evaluation of clouds in a mountainous valley. *Thirteenth Annual Workshop on Weather Prediction in the Intermountain West.* Salt Lake City, Utah 16 November, 2006.
  31. Malek, E. 2007(a). Evaluation of 20-min and annual radiation budget components and cloudiness in a mountainous valley. *2007 AGU Joint Assembly.* Acapulco, Mexico, 22-25 May, 2007.
  32. Malek, E. 2007(b). Evaluation of dew in semi-arid desert valleys. *4<sup>th</sup> Internat. Conf. on Fog, Fog Collection, and Dew. Fogquest.* La Serena, Chile, 22-27 July, 2007.
  33. Malek, E. 2007(c). Effects of dew, frost, and snow on a non-ventilated net radiometer. *4<sup>th</sup> Internat. Conf. on Fog, Fog Collection, and Dew. Fogquest.* La Serena, Chile, 22-27 July, 2007.
  34. Malek, E. 2007(d). The wintertime air pollution in Cache Valley, Utah, USA: Causes and possible solutions. Evaluation of 20-min and annual radiation budget components and cloudiness in a mountainous valley. *2<sup>nd</sup> Internat. Conf. on Environ. Athens Instit. For Educ. And Res. (ATINER).* Athens, Greece, 2-5 Aug., 2007.
  35. Malek, E. 2007(e). Effects of cloudiness on the daily and annual radiation balance: Elaboration of the shortwave and longwave radiation. *AGU Fall Meeting.* San Francisco, CA, 10-14 Dec. 2007.
  36. Malek, E. 2008. Evaluation of cloud feedback at local scale: warming or cooling? *Internat. Rad. Symp.* Foz Do Iguass, Brazil, 3-9 Aug., 2008.
  37. Malek, E. 2009. On Application of Ventilated Pyranometers and Pyrgeometers for Evaluation of Annual Radiation Balance and Cloud Feedback at Local Scale. *The 2<sup>nd</sup> Internat. Mult. Conf. on Engin. Technol Innov.* Orlando, Florida, 10-13 Jul., 2009.
  38. Malek, E. 2010(a). The Wintertime Air Pollution in Cache Valley, Utah, USA: Causes and Possible Solutions. *Urban Environmental Pollution - UEP 2010 Overcoming Obstacles to Sustainability and Quality of Life.* Boston, USA, June 20-23, 2010.
  39. Malek, E. 2010(b). Dew Effects on Radiometry. *5<sup>th</sup> Internat. Conf. Fog, Fog Collection, Dew. Meunster, Germany,* July 23-31, 2010.
  - 40- Malek, E. The daily and annual (2007) effects of dew on a non-ventilated net radiometer. *5<sup>th</sup> Internat. Con. Fog, Fog Collection, Dew.* Meunster, Germany, 25-30 July, 2010.
  - 41- Malek, E. Alternate energy from Deserts (2013). *93<sup>rd</sup> AMS Annual Meeting.* Austin, TX, 6-10 Jan., 2013.
  42. Malek, E. and Bingham, G. E. 1993. Growing season evapotranspiration and crop coefficient. *The Amer. Soc. Civil Eng. Conf. on Manage. of Irrig. and Drain. Sys.: Integ. Perspec.* Park City, Utah. July 1993.
  43. Malek, E. and Bingham, G. E. 1994. Atmospheric emissivity under cloudless and cloudy skies. *21st Conf. Agric. For. Meteorol. Amer. Meteorol. Soc.,* San Diego, California, 7 - 10 March 1994. 16 -19 pp.

44. Malek, E., Bingham, G.E., and Hipps, L.E. 1987. Daily and seasonal evapotranspiration losses from the margin and playa of a west desert valley. *The 18th Conf. on Agric. and Forest Meteor. Amer. Meteor. Soc.*, Purdue University, West Lafayette, Indiana. Sep. 1987.
45. Malek, E., Bingham, G. E. and Hipps, L. E. 1995. Annual mesoscale study of radiation components in a Great Basin desert valley. *The Spring Meeting of Amer. Geophys. Union.* Baltimore, MD, May 30 - June 2, 1995.
46. Malek, E., Bingham, G.E., and McCurdy, G.D. 1991 (a). 20-minute calculations of evapotranspiration from a remote moist playa of a closed desert valley. *The XVI General Assembly of the European Geophys. Soc.*, Wiesbaden, Germany. April 1991.
47. Malek, E., Bingham, G.E., and McCurdy, G.D. 1991(b). 20-minute calculation of alfalfa canopy resistance using the Bowen ratio-energy balance and Penman-Monteith methods. *The Amer. Meteorol. Soc. Tenth Conf. on Biometeorol. and Aerol.*, Salt Lake City, Utah. Sep. 1991.
48. Malek, E., Bingham, G.E., McCurdy, G.D., and Hanks, R.J. 1991 (a). Determination of alfalfa evapotranspiration irrigated with saline wastewater from the electrical power plants. *The spring meets. of Utah Acad. of Sci., Arts and Letters*, Salt Lake City, Utah. May 10, 1991.
49. Malek, E., Bingham, G.E., McCurdy, G.D., and Hanks, R.J. 1991 (b). Use of the Bowen -ratio method to determine evapotranspiration of alfalfa irrigated with saline wastewater. *The Amer. Meteorol. Soc. 20th Conf. on Agric. and For. Meteorol.*, Salt Lake City, Utah. Sep. 1991.
50. Malek, E. and Bingham, G. E., Neale, C. M. U., Hipps, L. E., Boettinger, J. L., Or, D., and Quattrochi, D. A. 1995. The west desert surface heat flux study: net radiation at local and regional scales. *The European Geophys. Soc. XX General Assemb*, Hamburg, Germany. April 3-7, 1995.
51. Malek, E., Bingham, G. E., and Or, D. 1996. Mesoscale study of radiation and water balances in a Great Basin heterogeneous semi-arid valley. *The European Geophys. Soc. XXI General Assemb.*, the Hague (the Netherlands), 6-10 May 1996.
52. Malek, E., Bingham, G. E., and Or, D. 1996. Water balance in a desert valley. *The Second International Scientific Conference on the Global and Water Cycle.* US National Academy of Sciences. Washington, D.C., 17-21 June 1996.
53. Malek, E. and Dudley, L. 2012. An Innovative Approach for Application of Saline Wastewater from a Coal-fired Power Plant for Agricultural Purpose. *92<sup>nd</sup> Amer. Meteorol. Soc.* 22-26 Jan., 2012.
54. Malek, E., and Giles, B. 2002. Application of saline wastewater for production of agricultural crops. *18<sup>th</sup> Ann. Internat. Con. Contaminated Soils, Sediments, Water.* Amherst, MA. October 21-24, 2002.
55. Malek, E., and Giles, B. 2003. Production of agricultural crops using saline wastewater. *13<sup>th</sup> Ann. West Coast Con. Contaminated Soils, Sediments, Water.* San Diego, CA, March 17-20, 2003.
56. Malek, E. and Wooldridge, G.L. 1977. Vertical mesoscale water vapor flux in an irrigated valley. *The Internat. Conf. on Meteorol. of Semi-Arid Zones.* American and Israeli Meteorol. Soc. Tel Aviv, Israel. Oct. - Nov. 1977.

## **Publications**

### **I. Refereed Journal Articles:**

- 1- Abdalla, S.H., Neale, C.M.U., Hipps, L.E., and Malek, E. 1997. Spatial and temporal variation of soil heat flux in sparsely vegetated arid ecosystems. *Proc. 17<sup>th</sup> Ann. Amer. Geophys. Un. Hydrol.* Days Publ. 1 - 12.
- 2- Abdalla, S.H., Neale, C.M.U., Malek, E., Hipps, L.E., and Bingham, G.E. 1996. Estimation of net radiation of sparse vegetation using multispectral video imagery. *Proc. 16<sup>th</sup> Ann. Amer. Geophys. Un. Hydrol.* Days Publ. 1 - 12.
- 3- Bingham, G. E. and Malek, E. 1993. Atmospheric radiation balance over alfalfa. *In: Management of Irrigation and Drainage Systems: Integrated Perspectives (Eds. Allen and Neale)*. Amer. Soc. Civil Eng. New York: 937-944.
- 4- Gillies, R., Symanzik, J., Malek, E. and Moller, A. 2009. Linked Micromap Plots for valuating Trends in Multi-Pollutant Deposition. *NADP Proceedings 2009-01*. Page 95.
- 5- Doyle, T.E., Malek, E., Taylor, M.J. and Wilkerson, T.D. 2005. Expanded Atmospheric Monitoring for the Utah Telescope Array. 29<sup>th</sup> Internat. Cosmic Ray Conf. Pune 8: 339-342.
- 6- Laymon, C., Quattrochi, D., Malek, E., Hipps, L., Boettinger, J., and McCurdy, G. 1998. Remotely-sensed regional-scale evapotranspiration of a semi-arid Great Basin desert and its relationship to geomorphology, soils, and vegetation. *Geomorphol.* 21(4-4):329-352.
- 7- Malek, E. 1979. Determination of the constants for the global radiation equation in Bajgah, Iran. *Agric. Meteorol.*, 20:233-235.
- 8- Malek, E. 1981. Methods of evaluating water balance and determining climatic type: an example for Bajgah, Iran. *Iran Jour. Agric. Sci.* 12:47-72.
- 9- Malek, E. 1984. Agro-climatic characteristics of the Bajgah area, Fars Province of Iran. *Iran Agric. Res.* 3:65-74.
- 10- Malek, E. 1987. Comparison of alternative methods for estimating ET<sub>p</sub> and evaluation of advection in the Bajgah area, Iran. *Agric. For. Meteorol.* 39:185-192.
- 11- Malek, E. 1992. Nighttime evapotranspiration versus daytime and 24-hour evapotranspiration. *J. Hydrol.* 138: 119-129.
- 12- Malek, E. 1993 (a). Rapid changes of the surface soil heat flux and its effects on the estimation of evapotranspiration. *J. Hydrol.* 142: 99-12.
- 13- Malek, E. 1993 (b). Comparison of the Bowen ratio-energy balance and stability-corrected aerodynamic methods for measurement of evapotranspiration. *Theor. Appl. Climatol.* 48: 167-178.
- 14- Malek, E. 1994. Calibration of the Penman wind function using the Bowen ratio-energy balance method. *J. Hydrol.* 163: 289-298.
- 15- Malek, E. 1996. An innovative method for use of saline waste water. *In: Energy, Electrical Power Systems, Water Resources, and Agriculture, (Eds. Khanbilvardi and Sadegh)*. Proc. Iran. Acad. Assoc. New York: 26-35.
- 16- Malek, E. 1997. Evaluation of effective atmospheric emissivity and parameterization of cloud at local scale. *Atmos. Research.* 45/1: 41-54.
- 17- Malek, E. 1998. Detecting and quantifying dew in semi-arid irrigated and desert valleys. *Proc. First Internat. Conf. On Fog and Fog Collection. Internat. Develop. Research Center,*



- Ottawa, Canada, 253-256.
- 18 - Malek, E. 2000. Winter time radiation and energy balance components and cloudiness in a mountainous valley. *Proc. Ninth Conf. On Mountain Meteorology*, Amer. Meteorol. Soc. Aspen, Colorado, 386-391.
  - 19- Malek, E. 2001. Dew effects on radiometry. *The Second Internat. Conf. On Fog and Fog Collect. Proc. Sec. Internat. Conf. Fog & Fog Collect.* Internat. Develop. Res. Cent. (IDRC), Ottawa, Canada, PP: 309-312.
  - 20- Malek, E. 2002. Evaluation of annual radiation and windiness over a playa: Possibility of harvesting the solar and wind energies. *J. Arid Env.* 52 (4): 555-564.
  - 21- Malek, E. 2003(a). Microclimate of a desert playa: Evaluation of annual radiation, energy, and water budgets components. *Intern. J. Climatol.*, 23: 333-345.
  - 21- Malek, E. 2003(b). Alternate energy from the desert. *J. Utah Acad.*, 123-133.
  - 22- Malek, E. 2004. An algorithm for continuous evaluation of cloud base temperature, height, and cloud coverage at local scale. Proceedings: *The 14th Conf. Internat. Con. Clouds & Precip.* Bologna, Italy. 18-23 July 2004. Page 1242-1245.
  - 23- Malek, E. 2007(a). Evaluation of dew in semi-arid desert valleys. Proceedings: *4<sup>th</sup> Internat. Conf. on Fog, Fog Collection, and Dew. Fogquest.* La Serena, Chile, 22-27 July, 2007. Page: 335- 338.
  - 24- Malek, E. 2007(b). Effects of dew, frost, and snow on a non-ventilated net radiometer. Proceedings: *4<sup>th</sup> Internat. Conf. on Fog, Fog Collection, and Dew. Fogquest.* La Serena, Chile, 22-27 July, 2007. Page: 347-3350.
  - 25- Malek, E. 2007 (c). The wintertime air pollution in Cache Valley, Utah, USA: Causes and possible solutions. *2<sup>nd</sup> Internat. Conf. on Environ. Athens Instit. For Educ. And Res. (ATINER).* Athens, Greece. Aug., 2007. 21-28.
  - 26- Malek, E. 2008 (a). Cloud contribution to the daily and annual radiation budget in a mountainous valley. *Doi.10.1016/j. atmos. res.2007.11.029.*
  - 27- Malek, E. 2008 (b). The daily and annual effects of dew, frost, and snow on a non-ventilated net radiometer. *Doi.10.1016/j. atmos. res.2008.02.006.*
  - 28- Malek, E. 2009. On Application of Ventilated Pyranometers and Pyrgeometers for Evaluation of Annual Radiation Balance and Cloud Feedback at Local Scale. Proc. The *2<sup>nd</sup> Internat. Mult. Conf. on Engin. Technol Innov.*: 343-344.
  - 29- Malek, E. 2015a. Evaluation of Cloud Feedback at Local Scale: Warming or Cooling? *J. Environ. Sci. Eng.* B4: 216-226. Doi: 10.17265/2162-5263/2015.04.006.
  - 30- Malek, E. 2015b. Comparison between the laser Beam Ceilometer and an Algorithm for Continuous Evaluation of Cloud Base Height and Cloud Base Temperature and Cloudiness at Local Scale. *GSTF J. Aviat. Technol.* Vol. 2, No. 1. Doi: 10.5176/2382-5758\_2.1.11.
  31. Malek, E. 2016. Differentiation of the atmospheric moisture collected by dew and fog. *J. Environ. Sci. Eng.* A 5: 171-179. Doi:10.17265/2162-5298/2016.04.001.
  - 32- Malek, E. and Bingham, G. E. 1993 (a). Growing season evapotranspiration and crop coefficient. *In: Management of Irrigation and Drainage Systems: Integrated Perspectives (Eds. Allen and Neale).* Amer. Soc. Civil Eng. New York: 961-968.
  - 33- Malek, E. and Bingham, G. E. 1993 (b). Comparison of the Bowen ratio-energy balance and the

- water balance methods for the measurement of evapotranspiration. *J. Hydrol.* 146: 209-220.
- 34- Malek, E. and Bingham, G. E. 1997. Partitioning of radiation and energy balance components in an inhomogeneous arid desert valley. *J. Arid Env.* 37: 193-207.
- 35- Malek, E., Bingham, G. E. and McCurdy, G. D. 1990. Evapotranspiration from the margin and moist playa of a closed desert valley. *J. Hydrol.* 120:15-34.
- 36- Malek, E., Bingham, G. E. and G. D. McCurdy, G. D. 1992. Continuous measurement of aerodynamic and alfalfa crop resistance using the Bowen ratio-energy balance and Penman-Monteith methods. *Bound. Layer Meteorol.* 59: 187-194.
- 37- Malek, E., Bingham, G. E., McCurdy, G. D. and Hanks, R. J. 1992. Determination of evapotranspiration from an alfalfa crop irrigated with saline waste water from an electrical power plant. *Irrig. Sci.* 13: 73-80.
- 38- Malek, E., Bingham, G. E., Or, D., and McCurdy, G.D. 1997. Annual mesoscale study of water balance in a Great Basin heterogeneous desert valley. *J. Hydrol.* 191: 223-244.
- 39- Malek, E., Davis, T., Martin, R.S., and Silva, P.J. 2006. Meteorological and environmental aspects of one of the worst national air pollution episodes (January, 2004) in Logan, Cache Valley, Utah, U.S.A. *Atmos. Research.* 79: 108-122.
- 40- Malek, E., and Dudley, L.M. 2010. Disposal of saline wastewater from electrical power plants. *Internal. J. Environ. Waste Manag.* Vol. 6, Nos. 1/2, 2010.
41. Malek, E., and Giles, B. 2003. Application of Saline Wastewater for Production of Agricultural Crops. *Contaminated Soils*, Vol 8, 315-333. Amherst Scientific Publishers, Amherst, MA.
42. Malek, E., Giles, B., Bingham, G.E. and Hanks, R.J. 1999. Saline wastewater and agriculture in central Utah. *J. Utah Academy.* Vol. 76: 97-107.
- 43- Malek, E. and Javan. M. 1980. Effect of weather and soil water content on alfalfa crop coefficient in Bajgah, Iran. *Jour. Iran Meteorol. Soc.:*2-8.
- 44- Malek, E., McCurdy, G., and Giles, B. 1999. Dew contribution to the annual water balance in semi-arid desert valleys. *J. Arid Environ.*, 42:71-80.
- 45- Malek, E. and Sepaskhah, A.R. 1981. Evaluation of Advection in the Bajgah Area, Iran. *Iran Jour. Agric. Sci.* 12:29-44.
- 46- Malek, E. and G. L. Wooldridge. 1983. Evaluation of profile method in calculation of evapotranspiration. *Iran Agric. Res.* 2:67-77.
- 47- Sepaskhah, A. R. and Malek, E. 1985. Synthesis of rainfall intensity-frequency regime of Iran. *Iran Agric. Res.* 4:99-107.

## **II. Books:**

- 1- Malek, E. 1983. Effective Rainfall in Irrigated Agriculture. *University Publ. Center. Tehran, Iran.* 190 pp. (Translated to Persian).
- 2- Malek, E. 1993. Knowledge and Measurement of Climatic Factors Affecting Agriculture. *Shiraz Univ. Publ., Shiraz, Iran,* 239 pp. (In Persian).
- 3 -Malek, E. and M. H. Alemi. 1986. Consumptive Use of Water and Irrigation Water Requirements. *University Publ. Center. Tehran, Iran.* 215 pp. (Translated to Persian).

## **III. Book reviewed:**

- 1- Malek, E. 1990. Climate and Agriculture: Systems approaches to Decision Making. A. Weiss, ed.

1989. 304 pp". *Bull. Amer. Meteor. Soc.* Vol. 71 (9): 1351-1353.
- 2- Malek, E. 2006. Desert Meteorology. T. T. Warner. 2004. 612 pp. *Bull. Amer. Meteor. Soc.* Vol. 87 (8):1100-1102.

#### **IV. Technical Bulletin:**

- 1- Malek, E. and A. A. Kamgar Haghghi. 1982. Manual of Different Methods of Irrigation Water Measurements. *Tech. Bull. No. 5, Shiraz Univ., Shiraz, Iran*, 30 pp.

#### **V. Published Abstracts:**

- 1- Bingham, G. E., Neale, C.M.U., Hipps, L.E., Boettinger, J., Malek, E., Or, D., Qattrochi D.R., and Astling, E.G... 1995. The west desert surface heat flux study: project description and initial results. *1995 Spring Meeting of Amer. Geophys. Union*. Baltimore, MD. May 29 - 2 June 1995.
- 2- Hipps, L. E., Or, D. and E. Malek. 1995. Spatial distribution of latent heat flux over a sparsely vegetated arid region. *1995 Spring Meeting of Amer. Geophys. Union*. Baltimore, MD. May 29 - 2 June 1995.
- 3- Malek, E. 1993. Determining water use in crops. *Utah Sci.* 53(4): p. 127.
- 4- Malek, E. 1994. Estimation of energy, momentum, and water fluxes in a semi-Arid Valley. *The XIX General Assembly of the European Geophysical Society*. Grenoble, France. April, 1994.
- 5- Malek, E. 1995. An innovative method for using saline waste water. *The Intern. Conf. on Meteorol. and Hydrol. Techn. and its Management*. Geneva, Switzerland. 22-26 May 1995.
- 6- Malek, E. 1997. Parameterization of cloud at local scale. *The European Geophysical Society XXII General Assembly*, Wien, Austria, 2126 April 1997.
- 7- Malek, E. 1998. Cloud parameterization in a semi-arid valley. *Sixth Internat. Conf. On Precip.: Predictability of Rainfall at the Various Scales.*, Mauna Lani Bay, Hawaii, U.S.A., June 29- July 1, 1998.
- 8- Malek, E. 1999 (a). A cloud scheme for the downscaled GCMs. *The AGU 1999 Spring Meeting*. Boston, MA, 1-4 June 1999.
- 9- Malek, E. 1999 (b). Regional-scale surface water and energy fluxes in an inhomogeneous valley. *Third Internat. Sci. Conf. On the Global Energy and Water Cycle*, Beijing, China, June 16- 19, 1999.
- 10- Malek, E. 2000. Measurement of the radiation balance components during snowy events. *XXV European Geophys. Soc. Millennium Con.*, Nice, France 25-29 April 2000.
- 11- Malek, E. 2005(a). Monitoring of cloud at local scale. *OSA Conf.-Fourier Transform Spectrometry/Hyperspectral Imaging and Sounding of the Environemnt*. Alexanria, VA, Jan.31 – Feb. 3, 2005.
- 12- Malek, E. 2005(b). Validation of local-cloud model outputs with the GOES satellite imagery. *2005 Joint Assembly: AGU, NABS, SEG, SPD/AAS*. New Orleans, LA, 23-27 May, 2005.
- 13- Malek, E. 2007. Evaluation of 20-min and annual radiation budget components and cloudiness in a mountainous valley. *2007 AGU Joint Assembly*. Acapulco, Mexico, 22-25 May, 2007.
- 14- Malek, E., Bingham, G.E., and Hipps, L.E. 1995. Annual mesoscale study of radiation

- components in a Great Basin Desert Valley. *1995 Spring Meeting of Amer. Geophys. Union*. Baltimore, MD. May 29 - 2 June 1995.
- 15- Malek, E., Bingham, G.E. and McCurdy, G.D. 1991. 20-minute calculations of evapotranspiration from a remote moist playa of a closed desert valley. *The XVI General Assembly of the European Geophysical Society*. Wiesbaden, Germany. April, 1991.
  - 16- Malek, E., Bingham, G.E., McCurdy, G.D. and Hanks, R.J. 1991. Determination of alfalfa evapotranspiration irrigated with saline wastewater from the electrical power plants. *Utah Academy of Sciences, Arts and Letters*, Salk Lake City, Utah. May 10, 1991.
  17. Malek, E., Bingham, G. E., and Or, D. 1996 (a). Mesoscale study of radiation and water balances in a Great Basin heterogeneous semi-arid valley. *The European Geophysical Society XXI General Assembly*, The Hague (the Netherlands), 6-10 May 1996.
  18. Malek, E., Bingham, G. E., and Or, D. 1996 (b). Water balance in a desert valley. *The Second International Scientific Conference on the Global and Water Cycle*. US National Academy of Sciences. Washington, D.C., 17-21 June 1996.
  - 19- McCurdy, G., Bingham, G.E., and E Malek. 1995. Seasonal variation in radiative components of a salt covered playa. *1995 Spring Meeting of Amer. Geophys. Union*. Baltimore, MD. May 29 - 2 June 1995.

#### **VI. Thesis, Dissertation, and Grant and Contract Reports:**

- 1- Ashcroft, G. L., Malek, E., Wooldridge, G.L. and Bingham, G.E. 1985. Findings of the climatology study associated with the proposed Jordanelle reservoir. *Utah State University Foundation*: 65 pp.
- 2- Bingham, G. E., Malek, E. McCurdy, G.D., and Hanks, R.J. 1988-1991. Irrigation season water balance on the Hunter and Huntington Research Farms. *Utah Agric. Exp. Stn., Utah State Univ. Res. Rpts.* 122, 128, 133 and 137.
- 3- Bingham, G.E., Neale, C.M.U., Hipps, L.E., Boettinger, J., Malek, E., Or, D., and Riley, J.P. 1994. Mesoscale study of surface heat fluxes and boundary layer processes in a desert region. *1993 Report. Submitted to NASA Earth Sci. Applic. Div.*
- 4- Bowles, D., Bingham, G. E., Lall, U., Tarboton, D. G., Balaji, R., Malek, E., and Kluzak, E. 1995. Development of mountain climate generator and snowpack model for erosion prediction in the Western United States using WEPP. *Utah Water Res. Lab., Utah State Univ.*, 121 pp (draft).
- 5- Bowles, D., Bingham, G. E., Lall, U., Tarboton, D. G., Malek, E., Balaji, R. Chowdhury, T. and Kluzak, E. 1993. Development of mountain climate generator and snowpack model for erosion prediction in the Western United States using WEPP. *Utah Water Res. Lab., Utah State Univ.*, 114 pp.
- 6- Jensen, D. T., Bingham, G. E., Ashcroft, G. L., Malek, E., McCurdy, G. D. and McDougal, W.K. 1990. Precipitation pattern analysis, Uinta Basin-Wasatch Front. Div. Utah Water Res. Contract # 90-3070. *Office of Utah State Climatologist, USU, Logan, Utah*, 40pp
- 7- Malek, E. 1974. Determination of Crop Coefficient for Various Formulas of Potential Evapotranspiration in the Bajgah Area. *M.S. Thesis, Shiraz University, Iran*. 61 pp.
- 8- Malek, E. and G. E. Bingham, G.E., and McCurdy, G.D. 1992-1994. Irrigation season water balance at the Castle Dale and Huntington Research Farms and the Huntington Upper field.

- Res. Utah Agric. Exp. Stn., Utah State Univ. Res. Rpts. 142, 147, and 150.
- 9- Malek, E. 1995-2004. Irrigation season water balance at the Hunter and Huntington Research Farms and the Huntington Upper Field. Utah Agric. Exp. Stn., Utah State Univ. Res. Rpts. 156, 157, 159, 163, 168, 180, 183, 186, 191.
- 10- Malek, E. 1977. Vertical Mesoscale Water Vapor Flux in an Irrigated Valley. *Ph.D. Dissertation, Utah State University, USA.* 91 pp.

## **VII. Preprints of Conferences:**

- 1- Ashcroft, G. L., G. D. McCurdy, G. E. Bingham, and E. Malek. 1990. Quality control of automated-climate-station data. *ASAE, Internat. Summer Meeting*, Columbus, OH, Paper # 904052.
- 2- Bahrani, B. and Malek, E. 1972. Measurement of actual evapotranspiration and comparison of the results with potential evapotranspiration calculated by different formulas. *Iran National Com. Irrig. Drain.* No. 8:171-181.
3. Biltoft, C., Klewicki, J., Malek, E., Price, R. And Turley, S. 1997. Development of an atmospheric surface layer turbulence and environmental test (SLTEST) facility. 12<sup>th</sup> Symp. Bound. Layers Turbul. *Amer. Meteorol. Soc. and Can. Meteorol. Ocean. Soc.* Vancouver, BC, Can., July 28-Aug. 1, 1997. 431-432.
- 4- Malek, E. 1992. Continuous measurement of radiation and energy budget components and evaluation of the atmospheric emissivity in a mountainous semi-arid irrigated valley. *Sixth Conf. on Mount. Meteor. Amer. Meteorol. Soc.*, Portland, OR. :106- 110.
- 5- Malek, E. 1997. Local-scale cloud study. *Ninth Conf. Atmospheric Radiation*, Amer. Meteorol. Soc., Long Beach, CA, 2-7 Feb 1997: 299-303 pp.
6. Malek, E. 2000. Winter time radiation and energy balance components and cloudiness in a mountainous valley. 9<sup>th</sup> Conf. on Mount. Meteorol., *Amer. Meteorol. Soc.*, Aspen, CO., 7-17 Aug. 2000: 386-391.
- 7- Malek, E., G. E. Bingham, and L. E. Hipps. 1987. Daily and seasonal evapotranspiration losses from the margin and playa of a west desert valley. *18th Conf. Agric. Forest Meteo* Amer. Meteorol. Soc., West Lafayette, Indiana. :121-124.
- 8- Malek, E., G. E. Bingham, and G. D. McCurdy. 1991. 20-minute calculation of alfalfa canopy resistance using the Bowen ratio-energy balance and Penman-Monteith methods. *Tenth Conf. on Biometeorol. and Aerol. Amer. Meteorol. Soc.*, Salt Lake City, Utah. :195-200.
- 9- Malek, E., G. E. Bingham, G. D. McCurdy, and R. J. Hanks. 1991. Use of the Bowen-ratio method to determine evapotranspiration of alfalfa irrigated with saline waste water. *20th Conf. on Agric. and For. Meteorol. Amer. Meteorol. Soc.*, Salt Lake City, Utah.
- 10- Malek, E. and Bingham, G.E. 1994. Atmospheric emissivity under cloudless and cloudy skies. *21st Conf. Agric. For. Meteorol. Amer. Meteorol. Soc.*, San Diego, California, 7 - 11 March 1994: 16 -19 pp.
- 11- Malek, E., Bingham, G.E., and Or, D. 1996. Water balance in a desert valley. *Second Internatl. Conf. Global Energy Water Cycle.* Washington, D.C., 17-21 June 1996: 101-102 pp.