UNR ATMS program Graduate Student Guide

Revised October 2014

Introduction

This student guide for the Graduate Program in Atmospheric Sciences at the University of Nevada, Reno is intended to be a resource to help guide students in their graduate study. It provides details on program requirements, including courses, graduate committees, theses and dissertations. It also provide guidance on who to contact with questions regarding meeting the academic program requirements. The guide gives a listing of ATMS courses currently in the UNR catalog and a list of ATMS graduate faculty and their research areas.

Program overview

The Graduate Program in Atmospheric Sciences offers graduate coursework and research training that lead to M.S. and Ph.D. degrees in Atmospheric Sciences. Originally founded in 1967 as a graduate program of Atmospheric Physics within the UNR Department of Physics, the curriculum was expanded in 1990 and the program name was changed to Atmospheric Sciences. Faculty of the DRI Division of Atmospheric Sciences (DAS) perform teaching of most ATMS courses, and they serve as primary thesis/dissertation advisors for graduate students from Atmospheric Sciences as well as other UNR interdisciplinary programs. Two tenure track faculty in the UNR Physics Department also teach classes in the program. As of January 2014 there were 35 faculty in the program. Research interests and contact information for each faculty member are shown in Appendix B. Atmospheric Sciences program students enroll in courses offered through UNR and most perform their research at DRI.

Graduate Assistantships

Most students in the graduate program in atmospheric sciences are supported by graduate research assistant (GRA) positions at DRI or UNR. There are at times a small number of teaching assistant positions as well. GRAs are dependent on the availability of external grants and contracts and continuation of support depends on the student’s satisfactory progress toward degree completion, satisfactory performance on the grant research, and availability of funding for the duration of the student’s academic study. Graduate assistantships are considered half-time (20 hours per week) during fall and spring semesters and may be increased to up to full-time during winter break and summer, if funding is available.

Degree Requirements:

UNR has minimum requirements to be met for all MS and PhD degrees. In addition the Graduate Program in Atmospheric Sciences (GP-ATMS) has more specific requirements. The UNR requirements are listed first:
UNR PROGRAM OF STUDY REQUIREMENTS- MS

Minimum of 30 graduate credits
Minimum of 21 of these credits earned at UNR
Minimum of 18 credits (including thesis credits) taken at 700-level
Masters Students must enroll in 6 thesis credits for degree completion
Maximum of 3 credits may be taken with S/U grading
Maximum of 9 credits completed prior to admission (including transfer credits)
All requirements (credits) for degree (including transfer credits) must be completed within the period of six years (6) immediately preceding the granting of the degree.
Minimum enrollment of 3 graduate credits each fall and spring semester.

UNR PROGRAM OF STUDY REQUIREMENTS- PhD

Minimum of 72 graduate credits
Minimum of 48 graduate credits of course work
Maximum of 24 graduate credits from a completed master’s degree program or previous post-baccalaureate work may be applied to program (this includes grad special, transfer, the total can not be more than 24 credits)
Maximum of 9 graduate credits of S/U grading (including transfer credits)
At least 30 credits of 700-level graduate credits exclusive of dissertation credits are required: as many as 18 of these credits may be used from a masters degree program
Doctoral Students must enroll in a minimum of 24 dissertation credits for degree completion
Fulfill residency requirement; two consecutive semesters (fall/spring or spring/fall) of at least nine (9) graduate credits each; (students on 20hr/week assistantships require six (6) credits each semester (fall/spring or spring/fall)
All requirements for the doctoral program, excluding prerequisite graduate course work or masters degrees, must be completed within a period of 8 years immediately preceding the granting of the degree.
Minimum enrollment of 3 graduate credits each fall and spring semester.

Program of study

Students must complete an approved program of study form before graduation. It is available at: (http://www.unr.edu/Documents/graduate-school/program-of-study.pdf )

The program of study form lists the courses that will be used to satisfy the degree requirements and is signed by the student, all committee members, the ATMS Graduate Program Director, and then turned into the graduate school for approval. It is recommended that students turn the form in at the earliest possible date for approval. This will help to avoid any possible problems later on regarding whether all requirements were met. Students may change their program of study by using the program of study change form. The graduate courses in atmospheric sciences,
including a short course description and their schedule of offering are listed in Appendix A and also below after the PhD requirements section.

GP-ATMS MS requirements:

Thirty credit hours, including:

- 12 credits ATMS core courses,
- 1 seminar (ATMS 790),
- 6 thesis (ATMS 797),
- 6 ATMS 700 level credits, and
- 5 additional 700 level credits.

ATMS Core courses: ATMS 610 Airflow and Weather Dynamics (3 credits), ATMS 611, Atmospheric Physics (3 credits), ATMS 612 Air Pollution (3 credits), and ATMS 613 Introduction to Synoptic Meteorology (3 credits)

Starting fall 2014, the core courses are:

ATMS 611, Atmospheric Physics (4 credits), ATMS 612 Air Pollution (4 credits), ATMS 617 Airflow, Weather Dynamics and Forecasting (4 credits).

Core courses are offered once per year. Most 700 level courses are offered every other year.

Students must complete an approved thesis to obtain the M.S. degree in Atmospheric Sciences. This includes a public presentation of their thesis work (thesis defense).

GP-ATMS PhD requirements:

Seventy-two credit hours, including:

- 24 credits dissertation (ATMS 799)
- 2 credits seminar (ATMS 790)
- 12 credits ATMS core courses
- 12 additional credits ATMS 700 level (must include ATMS 795 Comprehensive exam)
- 18 additional credits 700 level ATMS or other programs

In December 2013 changes to the required curriculum for the Ph.D. program were adopted by a vote of the ATMS faculty. Students in the Ph.D. program are required to take three out of the eight following courses:

- 706 Applied data analysis
- 742 Atmospheric Dynamics 2
- 743 Aerosol and Cloud Physics
- 745 Atmospheric Turbulence
- 746 Atmospheric Modeling
• 747 Atmospheric Chemistry
• 748 Measurement in the Atmosphere
• 749 Atmospheric Radiation

Due to the infrequent offering of some courses, students are strongly encouraged to enroll in these courses when available, as they may not have another chance. To the extent the program budget and other resources allow, the seven classes listed above will be offered once every other year.

Up to 24 hours of graduate course credits from previous study at UNR or other institutions may be counted toward the PhD course credit requirements.

Students must complete an approved dissertation to be awarded the Ph.D. degree in Atmospheric Sciences. This includes a public presentation of their dissertation work (dissertation defense).

For both MS and PhD, if the core courses or their equivalent were taken at UNR or another institution, then, with the approval of the Graduate Program director, these courses are not required. However, the required total number of course credits are not changed.

**Course offering schedule**

The course offering schedule is listed below.

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall 2014</th>
<th>Spring 2015</th>
<th>Fall 2015</th>
<th>Spring 2016</th>
<th>Recurring schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>411/611 Atmos. Physics</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>Every fall</td>
</tr>
<tr>
<td>412/612 Air Pollution</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Every fall</td>
</tr>
<tr>
<td>417/617 Airflow, Wx Dynamics, Forecasting</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>Every spring</td>
</tr>
<tr>
<td>706 Applied Data Analysis</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Fall odd years</td>
</tr>
<tr>
<td>742 Atmos Dynamics 2</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Fall even years</td>
</tr>
<tr>
<td>743 Cloud and Aerosol Physics</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Spring even years</td>
</tr>
<tr>
<td>745 Atmos Turbulence</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Spring odd years</td>
</tr>
<tr>
<td>746 Atmos modeling</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Fall odd years</td>
</tr>
<tr>
<td>747 Atmos Chemistry</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Spring odd years</td>
</tr>
<tr>
<td>748 Measurement in the Atmos</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>every spring</td>
</tr>
<tr>
<td>749 Radiation transfer</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Fall even years</td>
</tr>
<tr>
<td>750 Field Course in Mountain Meteorology</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Spring even years</td>
</tr>
<tr>
<td>790 Seminar</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Every spring</td>
</tr>
<tr>
<td>414/614 Physical climatology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As needed and funding allows</td>
</tr>
<tr>
<td>706 Applied data analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As needed and funding allows</td>
</tr>
<tr>
<td>741 Atmos Motions 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As needed and funding allows</td>
</tr>
<tr>
<td>744 Advanced synoptic meteorology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As needed and funding allows</td>
</tr>
<tr>
<td>792 Special problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As needed and funding allows</td>
</tr>
</tbody>
</table>
Advisor/Examining Committee

Each student shall form an advisory/examining committee that will guide the student’s academic studies and research. The committee will approve the student’s program of study and thesis/dissertation research and preparation. The committee must also approve the student’s thesis or dissertation and administer the comprehensive exam for PhD candidacy. All committee members must be members of the UNR graduate faculty unless otherwise approved by the Graduate School. Most students that are funded with research assistantships upon entering the program will have a major advisor from the beginning. Other committee members should be selected by the end of year 1 for M.S. students and during year 1 and not later than year 2 for PhD students. The committee is officially selected by completion of the program of study form.

MS committees:

The MS committee consists of 3 or more members, one of which is designated the graduate school representative. All committee members must be members of the UNR graduate faculty. The Graduate School Representative is filled by a graduate faculty member who holds an academic appointment in a department of program other than ATMS. (The Graduate School Representative may hold an appointment in the ATMS faculty as long as he/she hold an appointment in another department or program as well.)

PhD committees:

The PhD committee consists of 5 or more members, one of which is designated the graduate school representative. All committee members must be members of the UNR graduate faculty. The Chair and at least two other members are from the ATMS program or a closely related program. Two members must be hold faculty appointments with programs outside of the ATMS program. The Graduate School Representative is filled by a graduate faculty member who holds an academic appointment in a department of program different other than ATMS. (The Graduate School Representative may hold an appointment in the ATMS faculty as long as he/she holds an appointment in another department or program as well.)

PhD Advancement to Candidacy

The University of Nevada, Reno requires a written and oral qualifying exam (comprehensive exam) that must be passed before a student is advanced to “candidacy” for the PhD degree. PhD students must sign up for and receive a satisfactory grade (S) for ATMS 795 (Comprehensive exam) before being advanced to candidacy. The program of study form must be completed and submitted to the graduate school before taking the comprehensive exam. In December 2013 the GP-ATMS adopted the research prospectus approach for the comprehensive exam.

THE RESEARCH PROSPECTUS

The student's committee will need to serve as a major advisory committee for the student. All
faculty members in the program will potentially impact the outcome of the comprehensive exam by volunteering to participate in the public portion of the exam.

The comprehensive exam is a detailed research prospectus to be presented by the student to his/her committee and to the public for a portion of it. In the following, 'Discussion' is to be read as both oral and written communication. The research prospectus outcome is a document that contains a strong outline for the Ph.D. dissertation. The comprehensive exam is passed by completing the research prospectus and associated oral exam to the satisfaction of the student's graduate committee.

The research prospectus includes:
a. Discussion of the research area and how it globally fits in to atmospheric sciences.
b. Discussion of all the areas of atmospheric sciences that are impacted by the proposed research, with details of impacts.
c. Historical development of the research area.
d. Survey of the current state of the art in the research area.
e. Discussion of other approaches to the problem that are being pursued elsewhere.
f. Outline for the proposed research topic with milestones to be achieved.
g. Discussion of branches necessary should the research go in unexpected directions.
h. Projection of the importance of the research to the future of atmospheric science.
i. Discussion of the career goals of the student.
j. Discussion of the nature of the proposed research from the evolving NSF perspective: Example: Is the research evolutionary and/or transformative? What are the impacts of the research on the general public? In what ways, if any, could the research be brought to the attention of the general public?
k. Discuss who funds the research, why they are interested in funding this research, and what they expect as an outcome of this research as a tangible product (dissertation, papers, data? new code development? instrument development? patents? products?)

There will be public and committee and student only portions of the oral exam. The public portion of the oral exam will be a seminar where the students present items c,d,e,f, and g. For the committee and student only portion of the exam, the committee will ask questions both directly related to the prospectus and more fundamental questions regarding the general subject area addressed in the prospectus. For example these questions may test the student’s knowledge of the underlying atmospheric science, physics, and chemistry of the research area.

The written prospectus must be completed to the satisfaction of the student’s graduate committee before taking the associated oral exam. At the discretion of the graduate committee, the student may retake the oral examination once if the oral exam is failed. If the committee declines to offer the student a second attempt at the oral exam a notice of proposed dismissal from the program will be sent to the student. A second attempt at the oral exam must be within one year of
the initial attempt. For any student failing the oral portion of the comprehensive exam twice a notice of proposed dismissal will be sent to the student.

Title 2, Chapter 11 of the NSHE code outlines procedures for dismissal of students from a program. The pertinent section from the code is presented below in bold.

**Section 2. Dismissal for Failure to Maintain Required Grades or Required Grade Point Average (GPA).**

If the program dismissal is based upon failure to maintain required grades or a required GPA for the particular program or for a course within the program, this program dismissal procedure does not apply and the student may be summarily dismissed from the program. The student’s only recourse to challenge a grade is to utilize the institution’s grade appeal process. If the student’s grade appeal is successful, the student must be reinstated in the program.

Failing the comprehensive exam (an unsatisfactory (S) grade) is considered failure to maintain required grades and will result in dismissal of the student from GP-ATMS.

Timing for completion of the comprehensive exam: Students shall complete the written exam (prospectus) and a successful (passed) oral exam by the end of their third year or be subject to possible dismissal from the program due to lack of progress. Dismissal due to lack of progress shall be based upon an evaluation by the committee members and the director of the ATMS graduate program of the potential for the student to complete a PhD dissertation in a reasonable time period (in any case not longer than the eight year maximum set by the graduate school). Any dismissal is subject to Title 2 Chapter 11 of the NSHE code as discussed above.

The 3-year time limit to complete the comprehensive exam applies to all students entering the PhD program in fall 2013 or later. Students entering before fall 2013 are encouraged to make similarly steady progress and are reminded of the eight-year limit to complete the degree set by the graduate school.

**Final oral examination**

Ph.D. students must pass a final oral examination (dissertation defense) administered by their advisory committee.

**Graduation application**

Graduate students must apply for graduation well in advance of their graduation date. The deadlines for submitting the graduation application are:

May graduation: March 1; August graduation: June 1; December graduation: Oct 1. The graduation application can be found at: [http://www.unr.edu/grad/forms/graduation-application](http://www.unr.edu/grad/forms/graduation-application)
Appendix A: Graduate courses in Atmospheric Sciences at the University of Nevada, Reno and course offering schedule are listed below:

ATMS 611 INTRODUCTION TO ATMOSPHERIC PHYSICS (every fall)
Lecture+Lab: 4+0
Credit(s): 4
Atmospheric structure; global radiation balance; radiation scattering by gases and aerosol particles; introduction to radioactive transfer; optical phenomena; atmospheric thermodynamics; cloud physics; aerosol mechanics.

ATMS 612 INTRODUCTION TO AIR POLLUTION (every fall)
Lecture+Lab: 4+0
Credit(s): 4
Aerosol and gas phase classification and measurement; regulatory requirements and control technology; smog, acid deposition and the ozone layer. Local and long-range transport.

ATMS 614 PHYSICAL CLIMATOLOGY (as needed)
Lecture+Lab: 3+0
Credit(s): 3
Physical basis for behavior of the climate system; flows and reservoirs of mass and energy; temporal and spatial scales of variability; contemporary climate issues.

ATMS 617 AIRFLOW, WEATHER DYNAMICS AND FORECASTING (every spring)
Lecture+Lab: 4+0
Credit(s): 4
Introduction to fluid motions in the atmosphere including turbulence, wind shear, mountain-valley circulations and weather fronts. Mathematical description of large-scale motions in the atmosphere; intensification and motion of weather systems; weather analysis, using maps and computer techniques.

ATMS 706 APPLIED DATA ANALYSIS (fall odd years)
Lecture+Lab: 3+0
Credit(s): 3
Philosophy of data analysis, statistical critical thinking, exploratory data analysis, regression, multivariate methods, spatial and time series analysis, randomization, bootstrap, Monte Carlo methods, statistical graphics.

ATMS 741 ATMOSPHERIC MOTIONS I (as needed)
Lecture+Lab: 3+0
Credit(s): 3
Dynamical principles that govern large-scale atmospheric motions. Theoretical and observational analyses of atmospheric motion systems. Application of theoretical treatment to observed atmospheric behavior.
ATMS 742 ATMOSPHERIC DYNAMICS II (fall even years)
Lecture+Lab: 3+0
Credit(s): 3

Atmospheric motions on small scales without coriolis force; atmospheric thermodynamics and convection, the earth's boundary layer; topography and urban areas; severe storms, mesoscale convective complexes.

ATMS 743 CLOUD AND AEROSOL PHYSICS (spring even years)
Lecture+Lab: 3+0
Credit(s): 3

Aerosol nucleation, growth and coagulation, cloud droplet and ice crystal nucleation and growth; cloud thermodynamics and chemistry; precipitation and electrification processes; measurement and modeling techniques.

ATMS 744 ADVANCED SYNOPTIC METEOROLOGY (as needed)
Lecture+Lab: 3+0
Credit(s): 3

Numerical and observational weather analysis techniques for synoptic-scale and mesoscale meteorological prediction using computer models, satellite, radar and other tools.

ATMS 745 ATMOSPHERIC TURBULENCE (spring odd years)
Lecture+Lab: 3+0
Credit(s): 3

Mechanical and statistical theory of turbulence. Application to convection, eddy diffusion, temperature and wind profiles.

ATMS 746 ATMOSPHERIC MODELING (fall odd years)
Lecture+Lab: 3+1
Credit(s): 3

Physical principles and methods for numerical predication of the atmosphere. Model theory and implementation with practical training using computer simulation models.

ATMS 747 ATMOSPHERIC CHEMISTRY (spring odd years)
Lecture+Lab: 3+0
Credit(s): 3

Applications of organic and inorganic chemistry to atmospheric sciences, including atmospheric evolution, air pollution, climate change, biogeochemistry and environmental regulation.

ATMS 748 MEASUREMENT IN THE ATMOSPHERE (every spring)
Lecture+Lab: 3+3
Credit(s): 4

Measurement of physically meaningful parameters in a heterogeneous, turbulent medium. Direct and remote sensing, data reduction, theory of instrument design.
ATMS 749 R RADIATION TRANSFER (fall odd years)
Lecture+Lab: 3+0
Credit(s): 3
Theoretical basis and numerical techniques for radiation transfer in the atmosphere. Interaction of radiation with atmospheric gases, cloud and aerosol particles and the surface.

ATMS 750 FIELD COURSE IN MOUNTAIN METEOROLOGY (spring even years)
Credits: 2

ATMS 790 R GRADUATE SEMINAR IN ATMOSPHERIC SCIENCES (every spring)
Lecture+Lab: 1+0
Credit(s): 1
Presentation by students, faculty and invited speakers on research methods and advances. Focus on development and critique of presentation techniques for academic and conference audiences. Maximum of 6 credits.

ATMS 792 SPECIAL PROBLEMS (as needed)
Credit(s): 1 to 6
Special study of advanced topics not specifically in courses or seminars. Maximum of 6 credits in special problems courses.

ATMS 795 COMPREHENSIVE EXAMINATION (every spring, summer, fall as needed)
Credit(s): 1 S/U only
Comprehensive exam for advancement to PhD candidacy.

ATMS 797 THESIS (every spring, summer, fall as needed)
Credit(s): 1 to 6
Master’s thesis credits. Must have at least 6 total.

ATMS 799 DISSERTATION (every spring, summer, fall as needed)
Credit(s): 1 to 24
Ph.D. dissertation credits, must have at least 24.
Appendix B: Atmospheric Sciences Teaching Program Faculty

Updated October 2014

For detailed information, see: http://www.dri.edu/das-faculty-and-staff [Note: Telephone Area Code is 775 unless noted otherwise].

W. PATRICK ARNOTT, Professor, Dept. of Physics, University of Nevada - Reno, Ph.D. (Physics), 1988, Washington State University. Applications of wave Propagation and scattering, including solar and terrestrial radiation transfer, remote sensing, and photoacoustic spectrometers for aerosol detection. Phone: 784-6834. Email: arnottw@unr.edu http://physics.unr.edu/FacArnott.html

FRANCO BIONDI, Professor, Dept. of Geography, University of Nevada – Reno, Ph.D. (Watershed Management and Geosciences), 1994, University of Arizona. Climate and forest dynamics, Holocene processes, environmental change. Phone: 784-6921 Email: fbiondi@unr.edu http://wolfweb.unr.edu/homepage/fbiondi/

TIMOTHY J. BROWN, Research Professor, Ph.D. (Climatology), 1995, University of Colorado. Climatology, Probability and Statistics. Phone: 674-7090 Email: tbrown@dri.edu www.dri.edu/tim-brown

STEVEN K. CHAI, Emeritus Associate Research Professor, Ph.D. (Atmospheric Physics), 1978, University of Nevada, Reno. Entrainment, mixing, and microphysics. Phone: 674-7070 Email: chai@dri.edu Web: www.dri.edu/steve-chai

RAJAN K. CHAKRABARTY, Assistant Research Professor, Ph.D. (Atmospheric Sciences), 2008, University of Nevada – Reno. Aerosol physics and radiation transfer. Phone: 674-7003 Email: Rajan.Chakrabarty@dri.edu http://www.dri.edu/rajan-chakrabarty

LUNG-WEN (ANTONY) CHEN, Associate Research Professor, Ph.D. (Chemical Physics) 2002, University of Maryland. Aerosol measurement and characterization, source apportionment. Phone: 674-7028. Antony@dri.edu http://www.dri.edu/antony-chen

JUDITH CHOW, Research Professor, Sc.D. (Environmental Science), 1985, Harvard University. ambient air and source sampling, chemical and physical analysis, field study design and management, modeling and impact assessment. Phone: 674-7050 Email: judy.chow@dri.edu http://www.dri.edu/judy-chow

JOHANN ENGELBRECHT, Research Professor, Ph.D. (Geology), 1987, University of Pretoria, South Africa. Multivariate data analysis, including Principal Components Analysis (PCA) and Multiple Linear Regression Analysis. Phone: 674-7027 Email: Johann@dri.edu www.dri.edu/johann-engelbrecht

VICKEN ETYEMEZIAN, Research Professor, Ph.D. (Environmental Science), 1998, Carnegie Mellon University. Fugitive dust emissions and controls, source apportionment, dispersion and deposition in the near-source region, instrument development. Phone: 702-862-5569 Email: vic@dri.edu http://www.dri.edu/viken-etyemezian
ERIC M. FUJITA, Research Professor, Ph.D. (Environmental Science and Engineering), 1992, University of California, Los Angeles. Source contributions to air pollution and visibility impairment; ozone-precursor relationships; trends in air pollution concentrations and emissions. Phone: 674-7084 Email: ericf@dri.edu  www.dri.edu/eric-fujita

ALAN W. GERTLER, Vice-President for Research, Ph.D. (Physical Chemistry), 1979, University of California, Los Angeles. Atmospheric chemistry; automotive emissions; acid deposition; heterogeneous processes; fates of air pollutants. Phone: 674-7061 Email: alang@dri.edu  www.dri.edu/alan-gertler

JOHN A. GILLIES, Research Professor, Ph.D. (Physical Geography), 1994, University of Guelph, Ontario. Aeolian geomorphology, sediment transport, and air pollution. Phone: 674-7035 Email: jackg@dri.edu  www.dri.edu/jack-gillies

MARK C. GREEN, Research Professor, Ph.D. (Atmospheric Science), 1990, University of California-Davis. Air quality and meteorology issues. Phone: 702-862-5445 Email: green@dri.edu  Web: www.dri.edu/mark-green

GANNETT HALLAR, Associate Research Professor, Ph.D. (Atmospheric and Oceanic Sciences), 2003, University of Colorado. Cloud Microphysics, In Situ Trace Gas Measurements, Aerosol Optical Properties. Phone: 970-819-0968 Email: Gannett.Hallar@dri.edu  http://www.dri.edu/gannett-hallar

JOHN HALLETT, Emeritus Research Professor, Ph.D. (Meteorology), 1958, Imperial College, London. Aircraft studies of convective cloud precipitation and electrification processes; aerosol formation and scavenging; ice growth, melting, and evaporation. Phone: 674-7013 Email: hallett@dri.edu

HEATHER HOLMES, Assistant Professor, Dept. of Physics, University of Nevada, Reno. PhD (Mechanical Engineering), 2010, University of Utah. Physics and chemistry of air pollution, boundary layer meteorology, particle dispersion and deposition, numerical modeling and field experiments. Phone: 784-6712. E-mail: hholmes@unr.edu  www.unr.edu/~hholmes

JAMES G. HUDSON, Research Professor, Ph.D. (Atmospheric Physics), 1976, University of Nevada, Reno. Cloud condensation nuclei measurement and characterization. Phone: 674-7020 Email: hudson@dri.edu  http://www.dri.edu/jim-hudson

MICHAEL KAPLAN, Research Professor, Ph.D. (Atmospheric Sciences), State University of New York, Albany. Mesoscale modeling, synoptic meteorology, dynamic meteorology, mesoscale meteorology, aviation meteorology, fire meteorology. Phone: 674-7051. Email: Mike.Kaplan@dri.edu  http://www.dri.edu/mike-kaplan

ANDREY KHLYSTOV, Associate Research Professor, Ph.D. (Chemistry) 1998, Wageningen University, The Netherlands. Atmospheric chemistry, atmospheric aerosol, environmental effects). Phone: 674-7084. Email: Andrey.Khlystov@dri.edu.
DARKO R. KORACIN, Research Professor, Ph.D. (Atmospheric Physics), 1989, University of Nevada, Reno. Numerical modeling; marine boundary layer; topographic flows and air quality; aircraft measurements. Phone: 674-7091 Email: darko@dri.edu  http://www.dri.edu/darko-koracin

JOHN M. LEWIS, Adjunct Research Professor, Ph.D. (Meteorology), 1969, University of Oklahoma. Ocean-air interaction, physical oceanography and parallel processing in computational meteorology. Phone: 674-7077 Email: john.lewis@dri.edu http://www.dri.edu/john-lewis

DOUGLAS H. LOWENTHAL, Research Professor, Ph.D. (Atmospheric Chemistry), 1986, University of Rhode Island. Aerosol sources, transport and climate effects. Phone: 674-7047 Email: dougl@dri.edu www.dri.edu/doug-lowenthal

MENACHEM LURIA, Affiliate Research Professor, Ph.D. 1972, Hebrew University. Chemical transport of atmospheric trace gases from natural and anthropogenic sources, long-range transport of atmospheric pollutants, urban air quality Phone: 674-7182. Menachem.Luria@dri.edu

JOHN MEJIA, Assistant Research Professor, Ph.D. (Meteorology), 2008, University of Oklahoma. Climate modeling and environmental impacts, climate dynamics, hydroclimate. Phone: 673-7667 Email: John.Mejia@dri.edu http://www.dri.edu/john-mejia

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