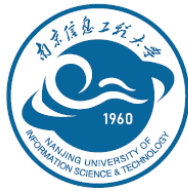




中华人民共和国商务部发展中国家学历学位教育项目



南京信息工程大学
Nanjing University of Information Science & Technology

2020 Master Program of Meteorology

Nanjing University of Information Science & Technology

2020

2020 Master Program of Meteorology

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I. Program Description

1. General Information

(1) Program Introduction

The degree education programs sponsored by Ministry of Commerce People's Republic of China was established in 2008, designed to foster high-end business officials and managerial personnel for the recipient countries, offering one-year and two-year master programs as well as three-year doctoral programs for the purpose of educating high-end and inter-disciplinary talent working in the applied fields of government, trade, foreign affairs, agriculture, technology, education, culture, health, energy, transportation and public administration, building intellectual capacity and facilitating the economic and social development of the recipient countries. These programs provide assistance to governmental officials, research fellows, and senior managerial personnel on their master and doctor education in China, which are fully conducted in English. Admission requirements include a bachelor's degree, relevant working experiences, and decent physical conditions, essential for the high-compact curriculum needed for the degrees.

The programs undertake an increasingly significant role in the economic development cooperation between China and the home countries of students, and are thought highly of by the governments of these countries.

The discipline of Atmospheric Science of Nanjing University of Information Science & Technology is a state-level key discipline, Jiangsu provincial key discipline and one of the Jiangsu universities' preponderant disciplines. It ranks No. 1 in the national third-round and fourth-round discipline evaluation conducted by the Ministry of Education People's Republic of China in 2012 and 2017. As one of the undertakers of the programs, Nanjing University of Information Science & Technology takes full advantage of the preponderant discipline resources and has established its Master Program of Meteorology in English-medium, whose research orientations include Dynamics of Atmospheric Circulation Anomaly, Monsoon and Air-sea-land Interaction, Typhoon and Meso-and Micro-scale Meteorology, Data Assimilation and Numerical Forecasting, Climatic Numerical Modeling, Weather Forecast Theory and Method, Short-term Climate Prediction, Climate Change and Regional Effect, etc.

The sustainable development of all the countries have been influenced by the changes of global climate and the worsening situation of weather disasters and atmospheric pollution, and the climate changes and disaster prevention and reduction become the major concern of governments and people as a social and scientific issue and one of the focuses of international diplomatic negotiation. Therefore, it has become a world consensus to adopt sound adaptation measures to cope with these threats. However, most developing countries have a quite low level of meteorology service, and their meteorology service capacity and measurements could not satisfy the needs of disaster prevention and reduction, emergency management and coping with regional climate changes. The main objective of the Master Program of Meteorology is to cultivate the senior talents in both meteorological research and application, enable them to master the frontier technology and most updated development in atmospheric science, establish professional mode of thinking, get a firm grasp of professional technology and skills in meteorology and relevant subjects so as to improve the meteorological service level of their home countries.

(2) Prospective Students

Our prospective students are mid-to-senior level officials or managers from the government, universities, research institutions, NGOs and other public sectors, who have academic background required by NUIST and a good mastery of English language.

(3) Program Objective

Cultivate high-end, compound and applicative talents in the field of meteorology.

(4) Enrollment Plan

Major	Enrollment Plan	Teaching Language	Program Duration
Master Program of Meteorology	15	English	Two-year

(5) Financial Aid

- (a) A waiver of tuition, fees of basic teaching materials, fees of field study and survey, allowance of English-taught courses and fees of thesis instruction.
- (b) Free on-campus accommodation.
- (c) Living allowance: 36,000 CNY/year per person for the master program.
- (d) One-time settlement allowance: 3,000 CNY/person.
- (e) Comprehensive medical insurance.

(f) The round-trip international air ticket is offered. For students of two-year programs, it offers a round-trip air ticket upon registration and graduation as well as one time round-trip air ticket for a home visit.

(g) All degree students shall attend the Annual Review and can continue to enjoy the full scholarship if they pass the assessment of performance.

(h) The rest expenses should be managed by the Chinese Ministry of Commerce or the undertaking university rather than granting to students. The Chinese Ministry of Commerce only sponsors students during the designated academic years, and will not continue to offer sponsorship if students extend their studies.

2. University Information

(1) Introduction to NUIST

Nanjing University of Information Science & Technology is located in Nanjing, the capital city of Jiangsu Province. As one of the four famous ancient capitals in China, Nanjing is reputed as the “capital of six dynasties” and “metropolis of ten dynasties” with a long history and profound culture. It is one of the vital birthplaces of Chinese civilization. Located in the Yangtze River Delta as an important comprehensive industrial base, with rapid and convenient transportation around the nation, Nanjing has developed into an industrial pattern featuring harmonious development of advanced manufacturing industry and modern service industry with electronic information, petrochemical industry, automobile manufacture and steel industry as its pillar, supported by rising economy such as software and service outsourcing, smart grid, wind and photovoltaic energy and rail transit, etc. Nanjing ranks No. 5 among top 50 cities in China in terms of comprehensive economic strength, and it is recognized internationally as one of the cities in the Asia-Pacific region with best developing foreground in 21st century. Nanjing is a modern city with vitality, charms and full potentials.

Nanjing University of Information Science & Technology (NUIST), on the list of China’s national “Double First-rate” universities and disciplines, one of the provincial high-level universities in Jiangsu Province, was founded in 1960 and renamed from Nanjing Institute of Meteorology in 2004, and it was designated in 1978 as one of the key institutions of higher learning in China. NUIST is a national-level key university co-constructed by the Jiangsu Provincial People’s Government, the Ministry of Education of the People’s Republic of China and the China Meteorological Administration (CMA). It is also co-established by the Jiangsu Provincial People’s Government and the State Oceanic Administration (SOA). NUIST has a complete higher education system with undergraduate, postgraduate,

doctoral programs as well as post-doctoral research centers. The discipline of Atmospheric Science ranks No. 1 in the national discipline evaluation conducted by the Ministry of Education of China, and it has great influence in the world.

Currently, NUIST has over 30,000 undergraduates, almost 4,000 postgraduates and more than 1,700 full-time teachers. There are more than 60 talents including academicians, experts of the “One Thousand Talent Project”, distinguished professors of Jiangsu Province, experts of Programs of Innovation and Entrepreneurship of Jiangsu Province, as well as 28 outstanding teams including the National Teaching Team, the Innovation Team of the Ministry of Education (MOE) and Expert Teams of Program of Innovation and Entrepreneurship of Jiangsu Province, etc..84.9% of the full-time teachers have doctor’s degrees and over 65.62% of them have experiences of studying or working abroad. NUIST consists of 22 schools, namely, School of Atmospheric Science, School of Applied Meteorology, School of Atmospheric Physics, School of Geographical Sciences, School of Remote Sensing and Geomatics Engineering, School of Hydrology and Water Resources, School of Marine Sciences, School of Environmental Science and Engineering, School of Automation, School of Electronic and Information Engineering, School of Computer and Software, School of Mathematics and Statistics, School of Physics and Optoelectronic Engineering, School of Law and Public Affairs, School of Marxism, School of Management Science and Engineering, School of Business, School of Chemistry and Materials Science, School of Artificial Intelligence, School of Liberal Arts, School of Media and Arts, School of Teacher Education. It also has high-level institutes, namely, Reading Academy, School of Continuing Education, School of Applied Technology, Department of Sports, Chang Wang College, Oufang School, Binjiang College as well as more than 30 provincial and ministerial scientific research institutions including the Collaborative Innovation Center on Forecast and Evaluation of Meteorological Disasters, the Collaborative Innovation Center on Atmospheric Environment and Equipment Technology, the first batch of international joint laboratory approved by MOE, i.e. the International Joint Laboratory on Climate and Environmental Change, Key Laboratory of Meteorological Disasters of MOE, Key Laboratory of Atmospheric Physics and Atmospheric Environment Meteorological Disaster of the CMA, China Institute of Manufacturing Industry Development as well as the Academic Institute of Climate Change and Public Policy, etc.

Occupying an area of 140 hectares, NUIST now has a floor area of almost 679,000 square meters for various uses. The university boasts 27 experimental teaching centers and 2 of them are listed as the national demonstrations of experimental teaching centers, i.e. the Experimental Teaching Center of Atmospheric Sciences and Environmental Meteorology and Virtual Simulation Experimental Teaching Center of Atmospheric Science and Meteorological Information. With a total collection of 2.35 million paper documents and over 40 databases as well as 1.89 million e-books

in Chinese and foreign languages, 1.19 million electronic periodicals and 1,051 paper periodicals, the library of NUIST has the most complete literature on atmospheric sciences among all the universities in China.

NUIST has a batch of key disciplines in both state and provincial levels and some brand and characteristic majors in China and Jiangsu Province. There are now 71 undergraduate majors covering the 9 main subject categories, namely science, engineering, management, literature, economics, law, agriculture, art and education. The master and doctor degree programs almost cover all the undergraduate majors. NUIST has established and effectively managed a disciplinary system of “macro meteorology”. The disciplines as Atmospheric Science, Environmental Science and Engineering and Sensor Network and Modern Meteorological Equipment have been approved in the first phase of the Advantageous Discipline Construction Program in Jiangsu Province. In recent years, on the basis of advantageous subjects, NUIST has established a harmonious discipline system of atmospheric science, marine science, information science, environmental science, management and basic science.

Over time the core values of NUIST have been defined by the traditions of “austerity, diligence, truth-seeking and self-motivation” and the motto of “promotion of virtue, investigation of nature, cultivation of self and construction of society”. Its education is oriented to cultivate “elite, international and skilled” talents. So far, more than 170,000 students have graduated from NUIST. They win good reputations among the employers by their down-to-earth attitude and outstanding capability. Many alumni have become well-known scientists, scholars and senior management staff home and abroad. Among them, there are academicians of the Chinese Academy of Sciences, the Chinese Academy of Engineering, the Canadian Royal Academy of Sciences, high-ranking leaders in the government and senior officers of WMO. NUIST won the First Prize in National Teaching Achievements Award with its project of “Establishment and Practice of Cultivation Mode of Macro Meteorology Talents under the Joint Construction System”. NUIST students won the Gold Award of the First National Internet+ Contest of Innovation and Entrepreneurship for College Students, the only Special Award in National Mathematical Modeling Contest---“Higher Education Press Cup”, the First Prize in National University Students “Challenge Cup” Competition, the First Prize in the National Undergraduate Electronic Design Contest, the Grand Prize of National Robot Competition, etc. NUIST Male Volleyball Team won the Champion in the Volleyball League of Chinese Universities.

NUIST attaches great importance to scientific and technological innovation. During the recent five years, NUIST has been actively taking part in more than 3,000 national programs including 538 projects of National Natural Science Foundation, 134 Projects of National Key Research and Development and projects of National

Social Science Foundation. Besides, NUIST has more than 3,476 authorized patents. In 2019, NUIST obtained science and technology funds of 441.42 million CNY. NUIST vigorously promotes the commercialization and industrialization of research outputs, and established several engineering centers, such as the National Technology Transfer Center and the Jiangsu Provincial Engineering Center of Meteorological Sensor Network Technology. Hundreds of scientific and technological rewards both on national and provincial levels have been awarded to the university teachers, including the Special Award of National Award for Science and Technology Progress, as well as international rewards like Carl-Gustaf Rossby Research Medal, Holton Junior Scientist Award of American Geophysical Union and You Bring Charm to the World Award, etc. A number of research papers were published in the top ranked journals like Nature, Science, etc.

NUIST has established cooperative relationship with over 70 famous overseas universities including Harvard University and Yale University in US, the University of Reading and the University of Manchester in UK, Macquarie University and Monash University in Australia, Japan Agency for Marine-Earth Science and Technology, Russian State Hydrometeorological University, Delft University of Technology in Holland, etc. The Reading Academy, co-established by NUIST and the University of Reading, is one of the first group of “UK-Jiangsu 20+20 World-Class University Initiative. College of International Students, NUIST, can enroll international students with Chinese Government Scholarship, Jiangsu Government Scholarship and Nanjing Government Scholarship. NUIST set up the Confucius Institute at the University of the Bahamas. To date, the WMO Regional Training Centre Nanjing at NUIST has become the world’s largest top quality training center and has trained over 3,600 senior meteorological and hydrological professionals for 157 countries and regions.

(2) Introduction to School of Atmospheric Science

School of Atmospheric Science is the one with longest history in NUIST, boasting of its advantageous and unique discipline. The discipline of Atmospheric Science was awarded as the provincial first-level key discipline in Jiangsu in 2008, the advantage discipline among Jiangsu provincial universities in 2011 and ranked No. 1 in the third-round and fourth-round national discipline evaluation conducted by the Ministry of Education of China in 2012 and 2017. It is on the list of national “Double First-class Construction Disciplines”.

The major of Atmospheric Science of the school aims to cultivate the high-level specialized talent with solid basic theories, knowledge and applicative skills in the field of atmospheric science. The school has two master programs, namely Meteorology, and Climate System and Climate Change. It has a first-level doctoral

discipline Atmospheric Science and two second-level doctoral disciplines namely Meteorology, and Climate System and Climate Change. Moreover, the school has the station for post-doctoral research in the field of atmospheric science.

The school has a team of 160 dynamic and enterprising faculty and staff, including 135 teachers of practical teaching. It has 59 professors and researchers, 30 associate professors and associate researchers, 55 doctoral supervisors, 50 master's supervisors. All faculties under the age of 50 hold PhD degree and 83% of them have oversea study or work experiences. The school has one academician of Chinese Academy of Sciences, two Innovation and Entrepreneurship Talents Teams of Jiangsu Province, the Excellent Technology Innovation Team of Jiangsu Universities in "Typhoon and Meso-andMicro-scale Meteorology", "Data Assimilation and Meso-and Micro-scale Meteorology" and "Interaction between Land Surface Processes and Atmosphere", the Technology Innovation Team of University Youth Excellence Project in Jiangsu Province in "Climate Modeling and Forecast" and "East Asia Monsoon and Regional Climate Changes", and the Excellent Talents Team of Jiangsu "Six Talent Peaks Project" in "Climate Diagnosis and Prediction". It has also established the innovation teams in the study and application of data assimilation, climate dynamics and the earth system model.

So far, School of Atmospheric Science has cultivated 6 distinctive and stable research fields within the scope of atmospheric science: atmospheric circulation and its dynamic process, interactions of monsoon and air-land-sea, numeral model and weather forecast, meteorological data processing and assimilation application, mesoscale meteorology and typhoon, climate change and regional response. The school has achieved fruitful scientific achievements and enjoys a leading reputation in the domestic atmospheric science field. The teachers won more than 140 awards of science and technology at various levels, including 3 international awards, 2 National Prizes for Natural Sciences, 8 National Prizes for Progress in Science and Technology, 11 National Scientific Conference Awards, 15 Provincial Awards of Science and Technology Progress and 4 Provincial Scientific Conference Awards, etc. Prof. WANG Bin, Overseas Dean of the School, was awarded the top international award in the field of atmospheric science—Carl-Gustaf Rossby Research Medal.

The school has the Key Laboratory of Meteorological Disaster of the Ministry of Education, Jiangsu Provincial Collaborative Innovation Center of "Pre-Warning and Assessment of Meteorological Disaster Forecast", Nanjing Atmospheric Statistics Center of National Natural Science Foundation, Civil Aviation Meteorology Research Center and other important provincial scientific research organizations. The School of Atmospheric Science has established "International Joint Laboratory of Climate and Environmental Change" with the University of Hawaii, the Florida State University, the University of Oklahoma and other famous universities, which

becomes one of the first three international joint laboratories approved by the Chinese Ministry of Education. In 2012, the “Practical Education Base of NUIST-CMA Meteorological Detection Center” was chosen as the national off-campus practical education base. In 2013, the “Experimental Teaching Center of Atmospheric Science and Environmental Meteorology” was selected as the national experiment teaching demonstration center. In 2014, its “Atmospheric Science and Meteorology Information” became the national virtual simulation experiment teaching center.

The school has cultivated lots of high quality research and management talents, including 3 academicians of the Chinese Academy of Sciences and the Chinese Academy of Engineering. The credits and diploma are widely acknowledged by renowned universities and research institutions at home and abroad. The school is the one who has cultivated most professional backbones, academic leaders and outstanding scientists in the field of Meteorology at home and abroad. By 2020, 200 international students graduated with bachelor’s, master’s and doctoral degrees from the School of Atmospheric Science, NUIST, among which 177 were graduates. Currently, 43 meteorological international students are studying in the school, including 11 undergraduates, 14 masters and 18 PhD students. Among the masters, 9 students are sponsored by the 2019 Master Program of Meteorology of Ministry of Commerce PRC.

(3) Living Conditions on Campus

(a) Climate of Nanjing

Nanjing has four distinct seasons with plenty of rainfalls. Its mean annual temperature is 15.4°C, and its mean annual precipitation is 1106 ml. The spring and autumn of Nanjing is short, while its winter and summer is long with a significant difference in temperature. The lowest temperature in winter is below 0 °C, and people wear down coats or thick cotton-padded jackets. The summer is very hot with a high temperature above 35 °C, and people wear summer clothing.

(b) Accommodation

Students live in the single-room dormitory on campus. There is an independent washroom, water heater, air conditioner and furniture inside the room. Students can choose to pay and get house heating service. There are public kitchens and a laundry as well inside the dormitory building. The dormitory offers free campus internet for international students. Students can also choose to pay for internet service provided by China Mobile or China Unicom. University wireless internet service is available in students’ dorms. The Dorm Chief, administrators and cleaning workers are in charge of dorm management and service. The dormitory building is equipped with

an entry system of face recognition technology to enhance the safety.

(c) Dining

Six large canteens are located on campus, offering a diversity of food and dishes with a reasonable price. There is also a Muslim restaurant on the mid-campus. Supermarkets, cake and milk tea shops are located in the living areas of the campus. Students can buy fresh food materials in the nearby market.

(d) Sports Facilities

The university has 3 standard track and field stadiums and 58 outdoor sports complex, including basketball courts, volleyball courts and tennis courts. It has 2 gymnasiums with indoor basketball arena, volleyball arena, badminton arena, table tennis arena, competition hall, physical training hall, martial art hall, squash hall, fitness and exercising center, etc. It has one natatorium. The sports facilities can meet the needs of daily physical education classes, training for sports teams and students' extracurricular activities.

(d) Library

There are 11 large-size book lending rooms, 11 medium-size book lending rooms, 2 intensive stacks, 3 e-reading rooms, a multimedia reading room and a training room for readers inside the university library. Its 370 computers allow students to conduct digital resources query, reading, download and internet surfing and also realize the functions of internship, exams and training. Besides, it has a video hall with 150 seats as well as a modern smart academic lecture hall. The modernized library is full of rich culture atmosphere.

The documentation collections of the library cover various fields, featuring the atmospheric science. It has a comprehensive collection system with rational construction to the needs of specialty setting, boasting of multiple disciplines, multilingual languages and multi-carriers. The library is open from 8 a.m. to 10 p.m. every day. In winter and summer holidays, it is open from Monday to Friday. The service of electronic resources is available 24 hours each day. As a member of Jiangsu universities who share literature recourses, the library offers the service of interlibrary loan with the majority of university libraries in Jiangsu Province.

(e) Places for Individual Study

All the classrooms of teaching buildings are open for students to study if it is not class hours. Book lending rooms and study rooms in the library are available too. International students' computer room, data room and 15 classrooms are located in the south building of Reading Academy, only open for international students. During winter and summer holidays, international students who stay on campus can use

these classrooms for study.

(f) Other Services

School clinic, student counseling center, internet center, e-card center, students' activity center, theater, supermarkets, express centers, variety store, China Telecom and China Mobile agencies, ATM service zones and other life facilities are fully equipped inside the campus and can meet all students' needs. The metro station "Nanjing University of Information Science & Technology" in metro line S8 is in front of the main gate and provides an easy access to all the students .

3. Teaching Arrangements

(1) Course Arrangements

(a) Curriculum

Type	Course	Class Hours	Credits	Opening Semester	Teaching Method	Form of Evaluation	Note
A	Orientation	16	1	1	In-Person Instruction	Exam	5 credits
	China Overview(1)	32	1	1	In-Person Instruction	Exam	
	China Overview(2)	32	1	2	In-Person Instruction	Exam	
	Comprehensive Chinese (1)	32	0.5	1	In-Person Instruction	Exam	
	Comprehensive Chinese (2)	32	0.5	2	In-Person Instruction	Exam	
	HSK Lecture(1)	32	0.5	1	In-Person Instruction	Exam	
	HSK Lecture(2)	32	0.5	2	In-Person Instruction	Exam	
B	Advanced Atmospheric Dynamics	48	3	1	In-Person Instruction	Exam	9 credits
	Geophysical Fluid Dynamics	32	2	1	In-Person Instruction	Exam	

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	Introduction to Atmospheric Science	32	2	1	In-Person Instruction	Exam	
	Principle and Practice of Synoptic Meteorology	32	2	1	In-Person Instruction	Exam	
C	Supervisor Course	16	1	2	Seminar	Evaluation	1 credit
D	Modern Meteorological Statistical Method	48	3	2	In-Person Instruction	Exam	No less than 9 credits
	Global Climate System	32	2	2	In-Person Instruction	Exam	
	Advanced Atmospheric Numerical Simulation	32	2	2	In-Person Instruction	Exam	
	Practice of Short-term Climate Prediction	32	2	2	In-Person Instruction	Exam	
	Frontier Lectures and Discussions	32	2	2	In-Person Instruction	Exam	
E	Academic Seminars	32	2	2	Others	Others	2credits

Note: A) Public Courses; B) Major Compulsory Course; C) Limited-Elective Course; D)

Major Elective Course; E) Practice

(b) Course Introduction

Advanced Atmospheric Dynamics: It is the study of those motions of the atmosphere that are associated with weather and climate. A primary goal of dynamic meteorology is to interpret the observed structure of large-scale atmospheric motions in terms of the physical laws governing the motions. These laws, which express the conservation of momentum, mass, and energy, completely determine the relationships among the pressure, temperature, and velocity fields.

Geophysical Fluid Dynamics: It introduces the fundamental dynamical concepts of

large-scale motions of the oceans and atmosphere. Two features that are common to many of the phenomena studied in geophysical fluid dynamics are rotation of the fluid due to the planetary rotation and stratification (layering). We emphasize on introducing inviscid shallow-water theory. The fluid is assumed to be incompressible. Remarkably, this works well even for a highly compressible fluid like air as long as sound and shock waves can be ignored. The shallow water waves include Poincare wave, boundary-trapped Kelvin waves and Rossby wave. The concept of quasi-geostrophic motion, and the mechanism of Rossby waves, inertial boundary currents, the beta-plane, energy propagation, and wave interaction are also introduced to understand some of the fundamental phenomenon of large-scale motions of the oceans and atmosphere.

Outline of Atmospheric Science: It covers broad aspects of atmospheric sciences including atmospheric thermodynamics, atmospheric radiation, world climate, atmospheric numerical modeling, atmospheric dynamics etc. As it is a survey kind course, many concepts in atmospheric sciences are introduced, including the structure, energy, and motions of the atmosphere; climate; fronts and cyclones; clouds and precipitation; weather forecasting; and severe storms. The course includes several homework tasks and a final exam. The students are also required to finish a group presentation project and one modeling project individually.

Synoptic Theory and Comprehensive Practice: Its purpose is to instruct students to understand the basic synoptic theory and the features of the atmosphere activity, and then analyze the evolution of the weather systems correctly. The teaching is aimed at cultivating students' practical ability and to make students grasp the analysis method of synoptic chart and various technological requirements and initially master forecast methods depended mainly on weather charts by closely combined the theory with the actual cases.

Modern Meteorological Statistical Method: It introduces common statistical methods in scientific research and forecast service on the basis of probability theory, mathematical statistics and linear algebra. The course consists of nine chapters, namely 1) meteorological data and its expression method; 2) selecting the maximum information forecast factors; 3) regression analysis; 4) the climate trend analysis; 5) climate stability test; 6) the Empirical Orthogonal Function analysis of meteorological fields; 7) cluster analysis; 8) meteorological statistics method application in scientific research; 9) meteorological statistical method application in forecast service. By learning this course, students learn to use statistical methods to engage in scientific research, operational forecast ability and for the future to continue their education or business foundation.

Global Climate System: It provides the understanding to the students about the concept and components of the global climate system and major findings within the areas of interest, along with an introduction to the fundamentals of the theory and

classical statistical methods used to detect the climate variability and how to make reasonable climate prediction. Also included in this course are the mean status and its variability of the general atmospheric circulation, the low frequency atmospheric fluctuation and teleconnection, the interactions among ocean, land and atmosphere, as well as a brief introduction of the numerical modeling of the climate system and its major elements, and etc., which are the most fundamentals for understanding how the climate system really works, the climate variation and making climate prediction. How to predict the China summer precipitation is given as an example in the last part to show and summarize the idea and process of short-term climate prediction.

Advanced Numerical Simulation of Climate: It aims to present the basic equations used in mesoscale climate models, as well as different numerical methods by which we solve these equations. Heavy programming practice will be assigned in this course and the students are hence required to have prior knowledge in advanced mathematics and programming language e.g. FORTRAN. There is no final exam for the course, however, the students are required to do various background reading and submit a final report by the end of the semester. The students are also expected to finish a modeling project during the semester, which consists of constructing a mesoscale model and running simple simulations.

Short-range Climate Prediction and Practice: It provides the student with an introduction to the fundamentals of the theory and classical statistical methods used to detect the climate variability and how to make reasonable climate prediction by series of practical cases. Also included in this course are the mean status along with its variability of the general atmospheric circulation, the low frequency atmospheric fluctuation and etc., which are the most fundamentals for understanding the climate variation and making climate prediction. How to predict the China summer precipitation is given as an example in the last part to show and summarize the basic idea and steps of climate prediction.

(c) Teaching Staff

ZHI Xiefei (Ph.D, Professor)

Prof. ZHI Xiefei is the Executive Editor-in-chief of *Transactions of Atmospheric Sciences*. His research field includes numerical weather prediction, monsoon dynamics, short-term climate prediction and climate change.

ZHANG Ling (Ph.D, Associate Professor)

Research Direction: regional climate change, short term climate prediction, strong convection mechanism.

ZHU Weijun (Ph.D, Professor)

Prof. ZHU Weijun researches in abnormal and modeling of general atmospheric circulation, observations and modeling of the interaction between ocean and atmosphere, short-term climate prediction and modeling.

WANG Jianhong (Ph.D, Professor)

Prof. WANG Jianhong researches in meteorology, marine meteorology, atmospheric and ocean dynamics. The specific research contents regional ocean and atmospheric numerical simulation, regional air sea interaction and mode coupling, weather radar monitoring products refinement application, atmospheric and oceanic vortex system dynamic structure and so on.

Professor WANG Wen (Ph.D, Associate Professor)

Prof. WANG Wen researches in meteorological dynamics, climate analysis, and drought mechanism.

Professor WEI Ming (Ph.D, Professor)

Research direction: radar digital image processing, radar quantitative measurement of precipitation, quality control and analysis of Doppler radar data, wind field retrieval and assimilation of Doppler radar, variational assimilation theory, application of radar data in mesoscale model, satellite remote sensing data variational inversion, the application of MODIS data in the boundary layer research, mesoscale heavy disaster weather forecasting and forecasting theory research and so on.

Professor TAN Guirong (Ph.D, Research Scholar)

Prof. TAN Guirong researches on the causes and prediction of short-term climate anomalies, including the impact of air sea interaction and atmospheric circulation anomalies on short-term climate anomalies, and short-term climate prediction methods. Recently, she focus on the interdecadal variation mechanism of the relationship between the tropical India ocean and the Yangtze Huaihe River and the interaction between the synoptic scale eddy and low frequency circulation, the precursory signal and prediction of the winter temperature anomalies, and the prediction of 10-30d low frequency heavy rainfall are mainly studied in the near future.

LI Liping (Ph.D, Professor)

Research direction: mainly engaged in the study of low frequency to decadal climate change rate.

ZHANG Xiao (Lecturer, Ph.D)

The research area of Dr. ZHANG Xiao is numerical simulation, geological climate.

(2) Teaching Methods

It is an English-medium program. Class teaching will combine theory with practice and adopt various teaching methods, such as lectures, case analysis, practice, etc.

(3) Class Sessions

Students shall register at the University from September 2021.

The supervisor and the students stipulate the cultivation plan within two weeks since registration. Students shall finish all the courses and obtain requested credits in the first and second semesters. Students shall finish the topic selection and the dissertation proposal at the beginning of the third semester. Students shall finish the mid-term evaluation before the end of the third semester. Students shall finish the pre-defense, dissertation review and dissertation defense in the fourth semester.

Students are supposed to graduate and depart from China before July 15, 2023.

(4) Dissertation

(a) Requirement of Dissertation

The whole thesis or part of it shall reach the level of publication in international or domestic core journals. Students shall publish at least one academic papers in published journals or international conference during the study at NUIST with the student being the first author or the supervisor being the first author and the student the second.

Students shall attend the mid-term evaluation at the beginning of the third semester. Those who fail in the evaluation cannot apply for the dissertation defense. The dissertation format refers to The Format of NUIST Postgraduates' Dissertation. The dissertation and its defense can be done in Chinese or English. If the dissertation is written in English, its abstract must be in Chinese.

Master students shall complete the dissertation independently under the instruction of the supervisors. The dissertation shall be the research findings of students themselves. Popular paper, thesis of vague theories, writings of comprehensive achievements of others or translated articles are not regarded as students' findings.

The fundamental scientific ideas, conclusion and implications of the dissertation shall offer theoretical inspirations and applicable values to domestic economy.

The problems involved in the dissertation shall reflect the solid theoretical and systematic expertise of the author in the related discipline.

The author shall be equipped with certain research techniques and methodological

skills (e.g. computing, experimental skills, detection and measuring skills), which indicate the author's abilities of conducting scientific research and specific technical work independently.

The author shall have innovative ideas or manage the theoretical or practical findings in the research acquired by the dissertation.

The dissertation shall include: title, contents, preface and review, body, conclusion, reference, appendix, abstract.

(b) Requirement of Dissertation Defense

The thesis defense shall last no less than 45 minutes for master's degree candidates. Master's degree candidates will get an Excellent, Qualified or Unqualified on the dissertation defense. Master's degree candidates who fail the defense can revise the dissertation within one year and apply for a make-up defense after the approval of the Dissertation Defense Committee and the Graduate School, NUIST. Students who pass the make-up defense can get their master's degrees in the next year. Students who fail the make-up defense will have no further chance of defense.

(5) Degree-granting

Students will be awarded master's degree when they obtain 26credits, achieve International Chinese Proficiency Standard Level 3 (HSK 3) or above and pass the dissertation defense which is approved by the Academic Degree Evaluation Committee.

NUIST shall grant international students the degree certificate. The certificate is written in Chinese. The degree certificate conferred on international students is equally authentic with domestic students.

II. Application Instruction

1. Requirements

All applicants must meet the following requirements:

(1) Applicants must be non-Chinese citizens from developing countries, abide by laws and regulations of People's Republic of China and the regulations of Nanjing University of Information Science & Technology, and show proper respect for Chinese customs.

(2) Applicants must be government cadres of division level or above (or corresponding level), senior management staff of institutions and enterprises, or leading academic talents in universities or academic institutions.

(3) Applicants must obtain a Bachelor's degree in Meteorology or relevant majors with CGPA 2.8 or above (out of 4); have good English proficiency; have at least 2-year relevant work experience; under the age of 45.

(4) Applicants who are not native English speakers are required to present English Language Proficiency Certificate. If the undergraduate education was in English, applicants shall submit a certificate of the English-medium education. Otherwise, language tests such as TOEFL 80 (or above) or IELTS 6.0 (or above) shall be submitted.

(5) Applicants shall be in good physical and psychological condition and have the health certificate or medical check-up report presented by the local public hospital. Applicants shall not carry any disease or fall into any of the situation listed below: diseases prohibited by China's Entry-Exit Inspection and Quarantine Laws and Regulations; other severe chronic diseases like high blood pressure, cardiovascular and cerebrovascular diseases, diabetes and cancer, etc.; psychological diseases; other infectious diseases which may have a serious impact on public health; in recovery period after major surgery or acute disease attacks; with severe physical disability. Pregnant women are rejected to participate in the program. If a female student gets pregnancy during the study, she has to quit university.

(6) Applicants have career development potentials in the field of meteorology and sincerely commit themselves to promoting friendly communication and cooperation between the home country and China.

(7) Students who are in China or admitted by Chinese Government Scholarship cannot apply for this program.

2. Procedures

(1) Application to NUIST

Please log onto NUIST's online application system (nuist.at0086.cn/student), register an applicant account, fill in personal information and upload required application documents.

Please be noted that:

- (a) Please register with valid email address, or you cannot activate your account. After a successful registration, an account activate code will be sent to your email.
- (b) Please choose the program of "MOFCOM Scholarship" when you start the online application.

(2) Application to Chinese Government Scholarship

Please visit the online application system of Chinese Scholarship Council at <http://www.campuschina.org/>, and register for an account. Select the program "Chinese Government Scholarship", fill in all the required information, and an application form will come into being. Print out the form, put on a hand-written name and date, and then post a photo on it. To complete the form successfully, please note the following information:

- (a) Please choose Program Category Type B when you start the online application.
- (b) The Agency No. of Nanjing University of Information Science & Technology is 10300, the Discipline is "Natural Science" and the Major is "Meteorology".

(3) Application Documents

Documents		Requirements
1	Notarized Highest Diploma	Scanned copy of notarized degree certificate.
2	Notarized Official Transcripts	Scanned copy of notarized transcripts which list all courses taken and all scores obtained.

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3	Study Plan	A study plan includes the information of goals set for each study stage, the tasks and research activities planned during the study duration, etc. This should be a minimum of 800 words.
4	Recommendation Letters	Two recommendation letters are required: one by a superior in the institution where the applicant works; the other by a professor who knows the applicant well.
5	English Language Proficiency Test Results	Applicants who are not native English speakers or whose undergraduate education was not conducted in English shall provide TOEFL or IELTS test scores or other sufficient English proficiency certificate.
6	Physical Examination Form	The health form shall be issued within one month before the submission of application, showing that the applicant is in good physical condition and carries no infectious diseases which may have a serious impact on public health or fall into any of the health situations prohibited by China's Entry-Exit Inspection and Quarantine Laws and Regulations.
7	Photocopy of a Valid Passport	The passport must be an ordinary passport, showing the information of Name and Passport No., etc. Diplomatic Passport or Service Passport are not accepted.
8	Other Supporting Materials	Such as published academic papers or other academic achievements, certificates of awards and training, Attestation of No-criminal records, etc.

(4) Submission

- (a) Applicants shall first get approval and recommendation from the dispatching authority of the home country, then submit the application documents according to the specific requirement of the authority.
- (b) If the dispatching authority of applicants' home country allows a direct application to the Economic and Commercial Counselor's Office of the Chinese Embassy, applicants can submit all the application documents listed in the above table as well as the NUIST Application Form and Chinese Government Scholarship Application Form in both hard copy and scanned copy to the Economic and Commercial Counselor's Office of the Chinese Embassy, together with the certification or recommendation issued by the dispatching authority of the home country.

- (c) The dispatching authority of the home country should submit a written request to the Economic and Commercial Counselor's Office of the Chinese Embassy for an official recommendation letter for applicants and clearly state whether the applicants are willing to be considered for a similar program at other universities if the program at NUIST is already full. Other special requests can be put forward too if any.

Reminders:

- a) All the documents to be submitted should be in Chinese or English. Otherwise, a notarized copy in Chinese or English is required.
- b) An original copy of degrees, transcripts and language certificates must be presented for on-site verification.
- c) Applicants will get back all the hard-copy materials, both original copies and photocopies from the Economic and Commercial Counsellor's Office. If admitted, they must take the documents to China for verification and submit them to NUIST during registration.

3. Deadline

The application deadline is April 30, 2021.

III. Other Important Information

1. Contact

Contact person: Ms. CAI Yi (Candy)

E-mail: caiyi@nuist.edu.cn

Tel: (86-25) 58699848

Fax: (86-25) 58699856

Website: gjy.nuist.edu.cn

Mailing address: College of International Students, Nanjing University of Information Science & Technology, 219 Ningliu Road, Pukou District, Nanjing, Jiangsu Province, China.

2. Others

- (1) All the application documents will not be returned whether the application is successful or not.
- (2) Chinese government will not explain the details of admission whether applicants are admitted or not.
- (3) Spouses and children are not allowed to accompany students studying. All the expenses related to spouses and children's visiting China are not covered by the scholarship program.
- (4) The formalities of entering China and other requirements will be informed in the admission documents.