

# CURRICULUM VITAE

## Dr Alexander Filkov

### EDUCATION

- 2002-2005: PhD, Thesis in Ecology “*Deterministic-probabilistic System for Predicting Forest Fire Hazard*” (Physical and Mathematical Sciences), Tomsk State University, Tomsk, Russia.
- 1997-2002: Specialist, Thesis “*Mathematical Modeling of Drying of Forest Fuel and Geoinformation System for Prediction of Forest Fire Hazard*”, Faculty of Mechanics and Mathematics, Tomsk State University, Tomsk, Russia.

### PROFESSIONAL EXPERIENCE

- 2020-Present: Senior Fire Behaviour Research Fellow, School of Ecosystem and Forest Sciences, the University of Melbourne, Australia.
- 2016-2020: Fire Behaviour Research Fellow, School of Ecosystem and Forest Sciences, the University of Melbourne, Australia.
- 2009-2016: Senior Researcher, Laboratory of Modelling and Predicting Catastrophes, Tomsk State University, Russia.
- 2007-2016: Associate Professor, Faculty of Mechanics and Mathematics, Tomsk State University, Russia.
- 2003-2016: Head of the University Laboratory, Department of Physical and Computational Mechanics, Faculty of Mechanics and Mathematics, Tomsk State University, Russia.
- 2006-2009: Researcher, Laboratory of Modelling and Predicting Catastrophes, Tomsk State University, Russia.
- 2002-2006: Junior Researcher, Laboratory of Modelling and Predicting Catastrophes, Tomsk State University, Russia.
- 2001-2002: Laboratory Assistant, Laboratory of Modelling and Predicting Catastrophes, Tomsk State University, Russia.

### TEACHING

- 2020-Present: Subject coordinator of the “Assessment of bushfire exposure” online course (*The University of Melbourne*). *The total time commitment is 42.5 hours*. This subject provides with the ability to undertake bushfire assessments of residential properties and provide building recommendations in line with Australian standards.
- 2020-Present: Subject coordinator of the “Building Behaviour in Bushfires” (EVSC90023) course (*The University of Melbourne*). *Five days intensive subject*. This subject covers the fundamentals of how domestic buildings respond to bushfire in a planned environment context.
- 2018-2019: Lecturing in “*Fire in the Australian Landscape*” (FRST30002) course (*The University of Melbourne*). *Two hours lecture and two hours practical*. “Fire and Combustion” lecture is intended to familiarize students with the basics of combustions, main mechanisms and processes, fire dynamics and fuel properties, main factors affecting the fire spread. SES score 4.56/5.
- 2016-2019: Run a practical to “*Patterns and processes of landscape fire*” (FRST90025) laboratory exercises and field trip (*The University of Melbourne*). *One day (8 hour) fieldtrip and 8 hours practical every year*. Adaptation of Variable Heat Flux Apparatus, Flame Propagation Apparatus and Non-combustibility Apparatus for laboratory exercises and development of procedures to run laboratory tests. Mentoring one of the four student groups during the field trip. SES score 4.75/5.
- 2009-2013: *Special series of lectures on the topic: “Wildfire Hazard” at Tomsk State University. Thirty two hours every year. Program of the course: Review of existing domestic and foreign methods for the prediction of wildfire hazard; Analysis of the effect of natural and anthropogenous factors on occurrence of wildfires and their prediction. The training course is designed for master degree students. SES score does not applicable.*
- 2007-2015: *The course: “Teaching and Research Work of Students” at Tomsk State University. Includes lectures and seminars. Thirty two hours every year. Program of the course: Acquaintance with the University. Studying the rules of presentation of work result, as making an oral report on a problem and developing the corresponding documentation. The course is designed for first year bachelor students. SES score does not applicable.*

- ⊞ 2007-2015: *Special series of lectures and practicum on the topic: “Geoinformation Systems” at Tomsk State University. Seventy two hours every year. Program of the course: Basic concepts and definitions. Structure of a GIS. Review of existing software. Organizational context. Typology and perspectives of GIS development. The course is designed for master degree students. SES score does not applicable.*
- ⊞ 2009-2010: *Practicum: “Continuum Mechanics” at Tomsk State University. Sixty four hours every year. Program of the course: Basic concepts of continuum mechanics. Elements of tensors calculus. Kinematics of a continuum. The course is designed for third year bachelor students. SES score does not applicable.*
- ⊞ *Developed and published two study guides “Geographical Information Systems” (2003) and “Laboratory Practicum for the Study of Heat-Mass Transfer” (2006) for undergraduate students of Mechanics and Mathematics Faculty at Tomsk State University (in Russian).*

## **HONORS, FELLOWSHIPS AND AWARDS**

- ⊞ 2020: Early Career Award in Fire Science, International Association of Wildland Fires (international level).
- ⊞ 2015: Laureate of the Tomsk Oblast Prize in the Field of Education and Science, Russia (state level).
- ⊞ 2013-2015: Fellowship of the President of the Russian Federation (national level).
- ⊞ 2013: Fulbright Program Fellowship (Worcester Polytechnic Institute, Massachusetts, USA) (national level).
- ⊞ 2009: Award from the Ministry of Emergency Situations of Russia for the supervision of research work of students (national level).
- ⊞ 2005: Laureate of the Tomsk Oblast Prize in the Field of Education and Science, Russia (state level).
- ⊞ 2004: Fellowship of the President of the Russian Federation (national level).
- ⊞ 2003-2006: Fellowship at the Research and Education Center «Physics and Chemistry of High-Energy Systems» under the joint program of the Ministry of Education (Russian Federation) and U.S. Civilian Research and Development Foundation (national level).

## **PATENTS AND CERTIFICATES**

- ⊞ Utility model RF patent # 183063. Generator of flaming and glowing firebrands. The application No. 2017145135 from 21/12/2017. - Authors: Kasymov D.P, Perminov V.V., **Filkov A.I.**, Agafontsev M.V., Reyno V.V., Gordeev E.V.
- ⊞ Certificate of State Registration for Computer Code No.2015617763. IRaPaD. Automatic Detection of Characteristics of Moving Particles on the Video in Infrared Range. The application No.2015614396 from 27/15/2015 - Authors: **Filkov A.I.**, Prohanov S.A.
- ⊞ RF Patent. A Test Complex for Modelling of Forest, Steppe and Peat Fires. The application No.2008117660/12 from 5/4/2008. - Authors: Grishin A.M., Zima V.P., Kuznetsov V.T., **Filkov A.I.**
- ⊞ Certificate of State Registration for Computer Code No.200961120. Determination of Kinetic Constants of Drying Process of Forest and Steppe Fuels. The application No.2008616152 from 12/24/2008 - Authors: Grishin A.M., Kuzin A.Ya., **Filkov A.I.**

## **TRAINING**

### *External*

- ⊞ 2014: Advanced training in “Fire Safety” and “Fire Behaviour” (Coimbra, Portugal).
- ⊞ 2011: Training in “TGA and DSC experiments for wildland fire investigation” at the University of Corsica (Corte, France).
- ⊞ 2010: Advanced training in “Fire Safety” and “Fire Behaviour” (Coimbra, Portugal).
- ⊞ 2010: Training in “Advanced Thermography in NDT” in the representative office of the FLIR Company (Munich, Germany).
- ⊞ 2007: Training in “Mathematical and Physical Modelling of Initiation and Propagation of Forest Fires” at the UMR 6134 CNRS laboratory (Corte, France).
- ⊞ 2006: Training in “The Use of Information Technologies for Prediction of Ecological Catastrophes” at the Institute of Information Technology (Baku, Azerbaijan) of the Azerbaijan National Academy of Science.

## **GRANTS**

### *International competitive grants*

- 2010-2012: Cooperative grant between Russia (Russian Foundation for Basic Research) and France (National Center of Scientific Research) “Study of smouldering fires ignition and spreading” (Principal Investigator).

### *National competitive grants*

- 2021-2023: ARC Discovery, Project “Understanding the Origin and Development of Extreme and Mega Bushfires: Merging Fire Fronts” (Principal Investigator).
- 2018-2021: BNHCRC, Project “Determining threshold conditions for extreme fire behaviour – extension” (Principal Investigator).
- 2018-2020: Russian Foundation for Basic Research, Grant No 15-31-20314-mol-a-ved “Development and testing of a programming complex for detection, tracking and measurement of firebrands generated during wildland and urban fires by using infrared videos” (Chief Investigator).
- 2015-2016: Russian Foundation for Basic Research, Grant No 15-31-20314-mol-a-ved “Mathematical modeling of firebrands transport in the gas flow generated from the surface fire front and conditions of ignition by them of forest litter” (Chief Investigator).
- 2012-2014: Russian Foundation for Basic Research, Grant No 12-01-00142-a “Mathematical Modeling of the forecast of peatland fires using deterministic and probabilistic approach” (Chief Investigator).
- 2012-2013: Federal Target Program of Russia, Grant No 14.B37.21.0634 “Physical, mathematical and geoinformation modeling of peatland parameters under intense anthropogenic load using field studies, landscape-geochemical and meteorological data for monitoring and predicting fire risk situation” (Chief Investigator).
- 2011: Russian Foundation for Basic Research, Grant No 11-08-90714 “Study of thermophysical and thermokinetic properties of solid organic fuels depending on scale effect and state parameters of the medium” (Chief Investigator).
- 2009-2011: Federal Target Program of Russia, Grant No P 1109 “Physical and mathematical study of spreading of wildland (forest and steppe) fires to reduce their risk and consequences” (Chief Investigator).
- 2006-2007: Grant of Federal Agency of Education of Russia No RNP No.2.2.2.3.6799 “Development of scientific and academic mobility within the framework of international collaboration”, the Research and Education Center “Physics and Chemistry of High-Energy Systems at TSU” (Chief Investigator).
- 2003: Grant No A03-3.21-464 for supporting research work of the post-graduates of the higher educational establishments, the Ministry of Education of Russia (Chief Investigator).

## **INVITATIONS**

- 2020: Guest Editor of a Special Issue entitled “Experimentation and Physics-Based Modelling to Support Prescribed Burning” (journal *Fire*, ISSN 2571-6255).
- 2020: Speaker, “Construction of buildings in bushfire areas”, PROCESS event CODE RED, 2 March 2020, Melbourne.
- 2019: Reviewer, the 13th International Symposium on Fire Safety Science, Canada.
- 2019: Reviewer, the 37<sup>th</sup> International Symposium on Combustion, Australia.
- 2019-Present: Member of the International Fire Safety Consortium representing the University of Melbourne on wildfire topic.
- 2019: Reviewer, International Congress on Modelling and Simulation 2019, December 1-6, Canberra.
- 2018: Session Chair and speaker at the Fire Continuum Conference, “Experimental investigation of the ignition potential of single firebrands and their accumulation”, “Experimental Investigation of Ignition and Thermal Degradation of Natural Fuels and Structural Materials Under Static and Dynamic Conditions”, May 21-24, 2018, Missoula, MT, USA.
- 2018-Present: Co-leader of the “Ignition Resistant Communities” (IRC) sub-group of the “Large Outdoor Fires and the Built Environment” group (International Association of Fire Safety Science).

- 📅 2018: Session Chair and member of the Scientific Committee, VIII International Conference on Forest Fire Research, November 9-16, 2018, Coimbra, Portugal.
- 📅 2017: Reviewer, the 12th International Symposium on Fire Safety Science, New Zealand.
- 📅 2016: Speaker at XX All-Russian Scientific Conference with International Participation “Conjugated Problems of the Mechanics of Reactive Media, Computer Science and Ecology”, September 2016, Russia.
- 📅 2015: Reviewer for the 36<sup>th</sup> International Symposium on Combustion, Republic of Korea.
- 📅 2015: Reviewer and Jury Member for the PhD thesis: “Évaluation des Simulations de Feux de Forêt”, presented by Bahaa NADER under the supervision of Professor Paul BISGAMBIGLIA and Dr. Jean-Baptiste FILIPPI, the University of Corsica, France.
- 📅 2015: Member of the Scientific Committee at the II International Conference on Fire Behaviour and Risk, May 26-29, 2015, Alghero, Italy.
- 📅 2014: Session Chair and member of the Scientific Committee, VII International Conference on Forest Fire Research, November 17-21, 2014, Coimbra, Portugal.
- 📅 2013: Speaker “Wildfire Research at Tomsk State University” at the Worcester Polytechnic Institute (USA) and the Missoula Fire Laboratory (USA).

## MEMBERSHIPS

- 📅 2016-Present: Member of the Combustion Institute - ANZ Section.
- 📅 2013-Present: Member of the International Association of Fire Safety Science.
- 📅 2013-Present: Member of the International Association of Wildland Fires.

## MEDIA

- 📅 2020: Interview to ABC 7.30 report on new approaches to study bushfires (ABC), January.
- 📅 2020: Interview to BBC Vietnamese on bushfires in Australia (Bangkok Bureau, Thailand), January.
- 📅 2020: Live video interview to CNA News channel on “Australia Bushfires” (CNA, Singapore), January.
- 📅 2019: Video interview “Mathematics of Fire” to Russia24 TV channel on 2019/20 bushfire season in Australia (Russia24, Russia), October.
- 📅 2016: Live interview to GTRK Tomsk radio about wildfire research at Tomsk State University (GTRK, Russia), May.

## CONFERENCES SINCE 2006

- 📅 International Congress on Modelling and Simulation 2019, December 1-6, Canberra (**Invited reviewer**). **Alex Filkov**, Brett Cirulis, Trent Penman “Quantifying dynamic fire behaviour phenomena using Unmanned Aerial Vehicle technology”.
- 📅 AFAC19 Conference, August 27-29, 2019, Melbourne. **Alex Filkov**, Brett Cirulis, James Taylor, Trent Penman “Using advancements in technology for better understanding of fire behaviour and decision making”.
- 📅 VI International Fire Behavior and Fuels Conference, April 29-May 3, 2019, Sydney, Australia. Shyanaka D., **Filkov A.I.**, Nguyen K., Weerasinghe P., Penman T., Mendis P. “An innovative approach on addressing fire behaviour of building facades in WUI areas”.
- 📅 VIII International Conference on Forest Fire Research, November 9-16, 2018, Coimbra, Portugal (**Session Chair, Member of the Scientific Committee, Reviewer**). **Alexander I. Filkov**, Trent D. Penman “Spontaneous ignition of vertically positioned wood samples under time-dependent heat flux”; **Alexander I. Filkov**, Luke Collins, Anthony Rawlins, Thomas J. Duff, Brett Cirulis, Trent D. Penman “The determinants of crown fire runs during extreme wildfires in broadleaf forests in Australia”.
- 📅 Fire Continuum Conference, May 21-24, 2018, Missoula, MT, USA (**Session Chair, 2 Invited presentations at Special Sessions**). **Alexander Filkov**, Denis Kasymov, Denis Gorbatov “Experimental investigation of the ignition potential of single firebrands and their accumulation”; **Alexander Filkov**, Kate Nguyen, Valery Kuznetsov “Experimental Investigation of Ignition and Thermal Degradation of Natural Fuels and Structural Materials Under Static and Dynamic Conditions”.
- 📅 Research Driving Change Showcase 2017, July 4, 2017, Adelaide. **Alex Filkov**, Tom Duff, Trent

Penman “Determining Threshold Conditions for Extreme Fire Behaviour”.

- 📖 Research Advisory Forum, October 25-26, 2017. **Alex Filkov**, Tom Duff, Trent Penman “Gaining benefits from adversity: standardising data obtained from wildfires”.
- 📖 AFAC 2017, September 4-6, 2017, Sydney. **Alex Filkov**, Tom Duff, Trent Penman “Gaining Benefits from Adversity: Standardising Data Obtained from Bushfires”.
- 📖 12th International Symposium on Fire Safety Science, June 12-16, 2017, Lund, Sweden (**Invited reviewer**). Vladimir Fateev, Michail Agafontsev, Sergey Volkov, **Alexander Filkov** “Determination of Energy Characteristics for the Particles Moving in the Gas Flow Under Laboratory Conditions”.
- 📖 Research Advisory Forum, October 18-19, 2016, Canberra. **Alex Filkov**, Tom Duff, Trent Penman “Determining Threshold Conditions for Extreme Fire Behaviour”.
- 📖 XXXIII Siberian Thermophysical Seminar, June 6-8, 2017, Novosibirsk, Russia. **Filkov A.I.**, Matvienko O.V., Kasymov D.P., Gorbатов D.A. “Simulation of Fuel Litter Ignition by Firebrands Generated by the Seat of Fire”.
- 📖 AFAC16 Conference, August 30 – September 1, 2016, Brisbane. **Alex Filkov**, Tom Duff, Trent Penman “Determining Threshold Conditions for Extreme Fire Behaviour”.
- 📖 XXth Conference on Conjugate Problems of Mechanics of Reactive Media, Informatics and Ecology, September 21-23, 2016, Tomsk, Russia (**Invited presentation**). Fateev VN, **Filkov A**, Agafontsev MV, Sosnitsky SA “Study of Combustion of Pine Bark in the Air Flow”.
- 📖 36th International Symposium on Combustion, July 31 - August 5, 2016, Seoul, Korea (**Invited reviewer**). **Alexander Filkov**, Sergey Prohanov, Eric Mueller, Denis Kasymov, Pavel Martynov, Mohamad El Houssami, Jan Thomas, Nicholas Skowronski, Bret Butler, Michael Gallagher, Kenneth Clark, William Mell, Robert Kremens, Rory Hadden, Albert Simeoni “Investigation of Firebrand Production During Prescribed Fires Conducted in a Pine Forest”.
- 📖 II International Conference on Fire Behaviour and Risk, May 26-29, 2015, Alghero, Italy (**Member of the Scientific Committee**). **Alexander Filkov**, Eric Mueller, Mohamad El Houssami, Jan Thomas, Nicholas Skowronski, Bret Butler, Michael Gallagher, Kenneth Clark, William Mell, Robert Kremens, Albert Simeoni “Firebrands Investigation During Prescribed Fires in a Pine Forest”.
- 📖 VII International Conference on Forest Fire Research, November 17-21, 2014, Coimbra, Portugal (**Session Chair, Member of the Scientific Committee, Reviewer**). **Filkov A.I.**, Kuznetsov V.T., Guk V.O “Ignition of wood subjected to the dynamic radiant energy flux”.
- 📖 IV International Fire Behavior and Fuels Conference, July 1-4, 2013, St. Petersburg, Russia (**Chair of the Organizing Committee, Member of the Steering Committee**). **Filkov A.I.** “Kinetic Study of Pyrolysis Processes of Peat”.
- 📖 All-Russian Conference «Burning of Solid Fuels», November 13-16, 2012, Novosibirsk, Russia. **Filkov A.I.**, Kuznetsov V.T., Novikov D.V., Sharypov O.V., Leroy-Cancellieri V., Cancellieri D., Leoni E., Simeoni A., Rein G. “Kinetic study of pyrolysis of peat”.
- 📖 All-Russian Conference «Mathematical and Physical Modeling of Hazardous Natural Phenomena and Technogenic Catastrophes», 2012, Tomsk, Russia (**Chairman of the Organizing Committee**). **Filkov A.I.**, Gladky D.A. “Mathematical Model of Drying of Peat Layer”.
- 📖 International Conference on Mechanics and Ballistics "VII Okunev Readings", June, 20–24, 2011, St.-Petersburg, Russia. Grishin A.M., **Filkov A.I.**, Gladky D.A. “Mathematical Modelling of Drying Process of Peat”.
- 📖 International Conference Zababahin Scientific Readings-2010, "High Energy Density Physics», March, 15–19, 2010, Snezhinsk, Russia. **A.I. Filkov**, V.T. Kuznetsov “Ignition of Various Kinds of Wood by the Radiant Energy Stream of High Intensity”.
- 📖 All-Russian Conference «Mathematical and Physical Modeling of Hazardous Natural Phenomena and Technogenic Catastrophes», October, 18–20, 2010, Tomsk, Russia (**Member of the organizing committee**). **Filkov A.I.**, Kuzin V.Ya., Leroy-Cancellieri V., Cancellieri D., Leoni E., Simeoni A., Rein G. “Research of Kinetic Processes of Various Kinds of Peat”; **Filkov A.I.** “Determination of Thermochemical Parameters of Steppe Surface Fuels”.
- 📖 VI International Conference on Forest Fire Research, 15–18 November 2010, Coimbra, Portugal. V.T. Kuznetsov, **A.I. Filkov** “Ignition of Various Wood by a Radiant Energy Flux”; **Filkov A.I.**, Gladkiy D.A. “Updating of Deterministic-probabilistic Technique for Predicting Forest Fire Hazard: Fire Prevention and Management”.
- 📖 8th All-Russian Conference "Conjugated Problems of Reactive Media Mechanics, Computer

- Science, and Ecology ", February, 18–20, 2009, Tomsk, Russia (**Member of the organizing committee**). Grishin A.M., Koshkin A.S., V.T. Kuznetsov, **A.I. Filkov** "Ignition of Wood by a Radiant Heat Flux".
- ☞ XVI International United Symposium "Atmosphere and Ocean Optics. Atmospheric Physics", October, 12–15, 2009, Tomsk, Russia. Grishin A.M., Kuznetsov V.T., Loboda E.L., Reyno V.V., **Filkov A.I.** "Physical Modelling of Grass and Steppe Fires in Field Conditions".
  - ☞ VI Mediterranean combustion symposium, June 7–11, 2009, Porticcio-Ajaccio, Corsica, France. **A.I. Filkov**, A.M. Grishin "The Determinate-Probability System of Prediction of Forest Fire Danger". Grishin A.M., Kuzin A.Ya., **Filkov A.I.**, Gorina I.A. "Some Results of Determination of Thermokinetic Constants of Peat Drying and Pyrolysis".
  - ☞ 6-th Minsk International Forum on Heat and Mass Transfer, May, 19–23rd, 2008, Minsk, Belarus. Grishin A.M., **Filkov A.I.** "Radiative and Convective heat transfer and Deterministic-Probabilistic Systems of Prediction of Wildfire Fire Danger".
  - ☞ 7-th International Conference "Mathematical Modelling of the Dangerous Natural Phenomena and Accidents", September 30th – October 2nd, 2008, Tomsk, Russia. **Filkov A.I.**, Sladkova T.V., Gorina I.A. "About Influence of Density and Heterogeneity of Fuel Bed on Surface Fires Spread Rate".
  - ☞ The All-Russia Conference on Mathematics and Mechanics, September, 22–25nd, 2008, Tomsk, Russia. **Filkov A.I.** "Creation of Large-scale Vector Maps for the Forecast of Fire Hazard".
  - ☞ The All-Russia Conference «Fires in Forest Ecosystems of Siberia», September, 17–19th, 2008, Krasnoyarsk, Russia. **Filkov A.I.**, Sladkova T.V., Gorina I.A. "Creation of Vector Maps and Database for Prediction of Wildfires".
  - ☞ The First Conference on Filtration Burning, May, 21–25th, 2007, Chernogolovka, Russia. Grishin A.M., **Filkov A.I.**, Burasov D.M., Sichev O.F., Rudi Yu.A. "Compilation of Database for CFD Models of Drying and Combustion of Fuels".
  - ☞ III All-Russia Conference of Young Scientists «Physics and Chemistry of High-energy Systems», April, 21–24th, 2007, Tomsk, Russia (**Chairman of the Organizing Committee**). **Filkov A.I.**, Rudi Yu.A. "The Database for Expert System of Prediction of Forest Fire Danger".
  - ☞ The International Conference "The Conjugate Problems of Mechanics, Computer Science and Ecology", June, 25–28th, 2007, Tomsk, Russia. Grishin A.M., **Filkov A.I.**, Burasov D.M. "Prediction of Forest and Steppe Fire Danger".
  - ☞ XIV Working Group "Aerosols of Siberia ", November, 27–30th, 2007, Tomsk, Russia. Grishin A.M., Zima V.P., Kuznetsov V.T., **Filkov A.I.** "Complex of Installations for Wildland Fires Investigation".
  - ☞ II All-Russia Conference of Young Scientists «Physics and Chemistry of High-energy Systems», May, 4–6 2006, Tomsk, Russia (**Chairman of the Organizing Committee**). **Filkov A.I.** "The Simplified Mathematical Model of Low-temperature Drying of Forest Fuel Layer".
  - ☞ The International Scientific-practical Conference «Snezhinsk and a Science 2006», June, 5–9, 2006, Snezhinsk, Russia. Grishin A.M., **Filkov A.I.** "Forest Fires and Safety of Critical Structures".
  - ☞ The International Conference «The Fifth Okunev's Readings», June, 26–30, 2006, Saint Petersburg, Russia. Grishin A.M., **Filkov A.I.** "Deterministic-Probabilistic Model for Prediction of Forest Fire Danger".
  - ☞ The International Conference «PCI 2006», October 24–26, 2006, Baku, Azerbaijan. **Filkov A.I.**, Grishin A.M. "Deterministic-Probabilistic Model for Prediction of Forest Fire Danger and Its Application".