

The complete precourse package for S-590 will be posted December 2013. The S-495 information is made available to now for your convenience.

S-495 Geospatial Fire Analysis, Interpretation, and Application **Online Portion Guide for S590 Students**

The S495 online course materials have been provided for S590 students for review. These materials can be found at the FRAMES website.

http://www.frames.gov/portal/server.pt/community/fire_behavior/212/s-495/2840

Recommended Units and Lessons for S590 Students

Course Pre-work (Lessons 2 and 3)

Unit 1: Overview of Geospatial fire analysis (Lesson 2)

Unit 3: Weather and Climate (Lessons 2, 5, 7, 8)

Unit 6: FlamMap (Lessons 1 and 4)

Unit 7: FARSITE (Lessons 1 and 7)

Unit 8: FSPro (Lesson 2 * This lesson suggests that you can open the FSPro analysis you completed in Lesson 1 but since this lesson includes graphics from FSPro you do not need to have completed an analysis to read this lesson.)

While a few modifications have occurred, most lessons have not been modified for the S590 student. Any reference to Blackboard, quizzes, evaluations, and individual lesson instructors should be disregarded.

- Exercises have two documents, the exercise and then the answers. If a lesson has an exercise, the lesson number is followed by (ex).
- A complete course outline and description of the each lesson is also provided with recommendations to the S590 students listed below in bold/italics.
- Several units have reference materials which include many scientific publications.
- The recommended lessons will provide the basic information about geospatial analysis and interpreting model results. However, correct understanding and interpretation requires an understanding of the inputs, limits, and assumptions. Many of the lessons in this course address these.

While many lessons are presented in a pdf textbook type document, several lessons are available as powerpoint and some as camtasia presentations. For these lessons you can view the presentation or look at the accompanying pdf version. Lessons with these formats are noted in italics.

S495 Online Material Course Outline

Items highlighted in Yellow are Recommended for S590 students

Course Pre-work

Lesson 1 - History of S-495, Course Outline, Evaluations, and Working in the Blended Learning Environment

Overview: This lesson provides an overview of how we arrived at S495, what is included, how students are evaluated and some information on working on Blackboard, the delivery system for S495.

S590 status: Informational if interested in the history of the course.

Lesson 2 – File Structure

Overview: Because the course and geospatial fire analysis uses a lot of data and information, file structure is critical to success. This lesson walks through setting up a file structure to help keep S495 materials organized. You may be surprised how important this is.

S590 status: Recommended if planning to download much of the S495 materials

Lesson 3 – Computer Requirements, Obtaining Software, and Establishing Internet Log-ins

Overview: Download all the software used in the course.

S590 status: Recommended to make sure you have all the current software.

Lesson 4 – Using Help Functions

Overview: This lesson walks through the help functions available in the software programs.

S590 status: Informational

Course

Unit 1 - Introduction to Geospatial Fire Analysis, Interpretation, and Application

Lesson 1 – Introduction to the Use of Geospatial Fire Decision Support Systems

Overview: This lesson discusses the philosophy of modeling in the context of fire and the geospatial fire decision support systems used in the course.

S590 status: Informational to get an introduction to modeling philosophy, some limits and assumptions and basic understanding of the tools.

Lesson 2 - Geospatial Fire Decision Support Systems

Overview: This lesson discusses some of the basic tenets of the various fire modeling systems and provides a comparison between Behave, FlamMap, FARSITE, and FSPro along with some limits and assumptions.

S590 status: Recommend slides 22 – 68 for comparison of fire modeling systems (Lesson 2 extracted). Other slides are additional information on the basics of the systems.

Unit 2 –Descriptive Statistics and Probability & Risk Assessment in Wildland Fire Management

Lesson 1 (ex) – Descriptive Statistics in Wildland Fire Management

Overview: Lesson discusses basic statistics used in fire management: central tendency, histograms, deviation from normal, box-plots, and variability

S590 status: Informational

Lesson 2 (ex) - Probability and Risk Assessment in Wildland Fire Management

Overview: Define and calculate various types of probability and look at risk and probability as used in fire.

S590 status: Informational

Unit 3 - Weather and Climatology

Unit 3 Introduction

Overview: Introduces the 10 lessons in the unit

S590 status: Informational

Lesson 1 – Evaluating Large-Scale Trends in Weather, Fuels, and Fire Occurrence

Overview: This lesson looks at fire season characteristics across the US, regional critical fire weather patterns and extreme situations, and weather leading to fire slowing or season ending periods.

S590 status: Informational

Lesson 2 – Indicators of Fire Growth Potential

Overview: A comprehensive look at drought indices, live fuel moisture conditions, NDVI images, dead fuel moisture calculations and various fire danger indices in the National and Canadian fire danger rating systems.

S590 status: Recommended

Lesson 3 (ex)– Accessing and Retrieving Weather and Fire Data

Overview: Obtaining weather and fire data from FAMWEB, KCFast and WRCC. Build a database in fire family plus

S590 status: Informational

Lesson 4 (ex)– Critiquing and Correcting Weather Data

Overview: Use FireFamilyPlus and WRCC to view, assess, and correct weather data.

S590 status: Informational

Lesson 5 (ex) – Developing and Interpreting Climatology Graphs and Data

Overview: Build and interpret climatology graphs

S590 status: Recommended – Building climatology graphs, particularly ERC, is a skill used in S590

Lesson 6 – Completing a Wind Analysis

Overview: Use FireFamilyPlus and WRCC to assess wind conditions

S590 status: Informational

Lesson 7 (ex)– Evaluating Local Climatology and Current Season Severity Exercise

Overview: This exercise is a compilation of the previous lessons. You will look at the current season and various weather indicators of fire potential and then compare these with historic seasons.

S590 status: Recommended

Lesson 8 (ex) - Fire-stopping and Season-ending Events

Overview: Use FireFamilyPlus to determine events that may slow/stop a fire and ones that indicate the end of the season. Review bimodal fire seasons

S590 status: Recommended – extracted portion of lesson and exercise looking at Term in FireFamilyPlus. Other is informational.

Lesson 9 (ex)- Weather Forecasts and Outlooks

Overview: Look at different types of weather forecasts and how they may be used in fire models

S590 status: Informational

Lesson 10 - Developing FARSITE Weather and Wind Files

Overview: Learn how to develop wnd and wtr files used in FARSITE and FlamMap

S590 status: Informational

Unit 4 - Concepts for Working with Geospatial Data in Fire Analysis

Unit 4 Introduction

NOTE: A basic understanding of ArcMap is helpful, but not required for this unit.

Overview: Introduction to what you'll learn in unit 4

S590 status: Informational

Lesson 1(ex) - Geospatial Data Formats and Sources

Overview: Begin to understand the GIS language of different data types and sources as well as what is used in geospatial fire analyses. Explore vector and raster data, KML and KMZ files and the landscape file

S590 status: Informational

Lesson 2 (ex)- Understanding Coordinate Systems and Projections

Overview: Learn how to define a coordinate system and projections and their importance in geospatial analyses.

S590 status: Informational

Lesson 3 (ex)- Geospatial Data Exploration

Overview: Learn how to explore data through point-based queries, statistical analysis, histograms, selection, and cell-by-cell analysis.

S590 status: Informational

Lesson 4 (ex)– Raster Data Modification and Analysis

Overview: Learn how to modify data a variety of ways in ArcMap and FARSITE

S590 status: Informational

Unit 5 - Geospatial Fire Analysis

Lesson 1 – Considerations in the Use of Geospatial Fire Decision Support Systems

Overview: More detail on the data and sources of error in the context of fire and the geospatial fire decision support systems.

S590 status: Informational

Lesson 2 – Simulating Crown Fire and Spotting in Geospatial Fire Modeling Systems

Overview: Detail about the crown fire models used in the various geospatial fire decision support systems such as FARSITE, FlamMap, and FSPro.

S590 status: Informational

Lesson 3 - Fuel Moisture Modeling within Geospatial Fire Modeling Systems

Overview: Detail on how dead and live fuel moistures are handled in the geospatial fire decision support systems covered in the class: FARSITE, FlamMap, FSPro.

S590 status: Informational

Unit 6 - Short-term Geospatial Fire Analysis using FlamMap

Unit 6 Introduction

Overview: Brief introduction to the unit

S590 status: Informational

Lesson 1 – Introduction to FlamMap

Overview: The introduction describes the main functions of FlamMap, compares it to other systems, and discusses several uses of the program.

S590 status: Recommended

Lesson 2 (ex)- The Mechanics of Running FlamMap Basic

Overview: Walk through setting up a basic FlamMap run

S590 status: Informational

Lesson 3 (ex)- Using Optional Settings in FlamMap

Overview: How to use wind grids and model fuel moisture variation across a landscape.

S590 status: Informational

Lesson 4 (ex)– Critiquing the Landscape File and Calibrating FlamMap Inputs

Overview: Exploring the landscape and fire behavior outputs in FlamMap

S590 status: Recommended

Lesson 5 (ex)– Modeling Short-Term Fire Spread using FlamMap’s Minimum Travel Time

Overview: Work through using MTT to model fire spread across the landscape.

S590 status: Informational

Lesson 6 - Advanced FlamMap – East Creek Scenario and Exercise

Overview: This exercise works through obtaining a landscape and weather data, developing a basic and MTT run, calibrating the model and interpreting the results

S590 status: Informational

Unit 7 - Mid-term Geospatial Fire Analysis using FARSITE

Lesson 1 – Introduction to FARSITE

Overview: Discusses the history of FARSITE, the models used, the limitations, and uses of FARSITE

S590 status: Recommended – extracted file, remaining is informational

Lesson 2 - Understanding FARSITE Fuels and Landscape Data

Overview: Discussion of the landscape data required and optional for FARSITE

S590 status: Informational

Lesson 3 (ex)- Overview of FARSITE Inputs

Overview: Works through the various FARSITE inputs, discusses projects, and demonstrates file management

S590 status: Informational

Lesson 4 (ex)– FARSITE Model Parameters

Overview: Demonstrates the influence of various model parameters on the analysis.

S590 status: Informational

Lesson 5 (ex)- FARSITE Simulations and Bookmarks

Overview: Understand how to run a simulation, what a bookmark is, and work through doing an analysis

S590 status: Informational

Lesson 6 (ex) - Fire Behavior Models in FARSITE

Overview: Addresses dead fuel moisture, flame front spread rate (surface and crown), spotting, acceleration, and post-frontal combustion

S590 status: Informational

Lesson 7 (ex)- FARSITE Outputs and Interpretation

Overview: Demonstrates how to generate, view and interpret outputs

S590 status: Recommended – extracted file and extracted exercise, rest is informational.

Lesson 8 - Mallory Swamp Exercise

Overview: This lesson is an exercise in creating a landscape, establishing a FARSITE run and interpreting the outputs

S590 status: Informational

Unit 8 - Long-term Geospatial Fire Analysis using FSPRO

Lesson 1 (ex)- Introduction FSPRO

Overview: Gives good overview of FSPRO and how the concept behind the analysis as well as an exercise to create and look at outputs.

S590 status: Informational

Lesson 2 – Overview of FSPRO Outputs

Overview: Works through the various outputs in FSPRO

S590 status: Recommended

Lesson 3 - FSPRO Interpretation and Application

Overview: Discussion on the differences between FSPRO and RERAP. Includes discussion of effects of various input choices.

S590 status: Informational