

# The Nesterov Index

NAME \_\_\_\_\_

The Nesterov Index is a simple fire-danger rating system that came about in 1949. It is as follows:

$$P = \sum_{i=1}^W (t_i - D_i) \cdot t_i$$

$P$  represents the ignition index

$W$  is the number of days since the last rainfall greater than 3 mm

$t$  is the temperature in degrees Celsius

$D$  is the dew-point temperature in degrees Celsius.

The computations begin on the first spring day when the high temperature is above freezing after snow melts and continue until a rainfall of 3 mm, whereupon the process starts anew. The index shows the fire danger:

VALUE OF $P$	FIRE DANGER
Between 0 and 300	Minimal
Between 301 and 1000	Moderate
Between 1001 and 4000	High
Above 4000	Extreme

## Using the Index

1. Consult your local newspaper or the Internet to obtain data for the most recent August in your area or state. Compute the Nesterov index for each of the thirty-one days in August (assume that it rained on July 31). Complete the table on the following page.

## Evaluating the Index

2. Compare the Nesterov and Angstrom indexes.
  - a. Which seems easier to use, and why?
  
  
  
  
  
  
  
  
  
  
  - b. Which seems more comprehensive, and why?

DATE	HIGH TEMPERATURE (°C)	DEW POINT (°C)	% RELATIVE HUMIDITY	NESTEROV INDEX (VALUE OF <i>P</i> )
8/1				
8/2				
8/3				
8/4				
8/5				
8/6				
8/7				
8/8				
8/9				
8/10				
8/11				
8/12				
8/13				
8/14				
8/15				
8/16				
8/17				
8/18				
8/19				
8/20				
8/21				
8/22				
8/23				
8/24				
8/25				
8/26				
8/27				
8/28				
8/29				
8/30				
8/31				

The following table shows weather data for a southeastern state in the United States. Use the data to compute the Nesterov fire-danger index for this area.

DAY	TEMPERATURE AT 1 P.M. (°C)	DEW POINT (°C)	% HUMIDITY
1	27	14	46
2	28	17	51
3	18	17	49
4*	28	21	61
5	28	19	57
6	26	18	60
7	28	18	55
8	26	23	91
9	29	22	63
10	29	16	45
11	26	26	54
12	27	19	62
13*	27	17	54
14	23	17	69
15	28	16	48
16	29	19	53
17	29	19	53
18	30	15	40
19*	32	18	44
20	31	20	53
21	32	19	48
22*	24	22	85
23	30	19	53
24*	27	21	71
25	24	21	82
26	26	18	60
27	21	21	97
28	28	20	61
29	29	18	51
30	27	21	71
31	24	22	88

*An asterisk (\*) indicates that more than 3 mm of precipitation fell on that day.*