Math 3CI Introductory Project: The S-I-R Model, September 26, 2008

You are chief health officer on a small Island whose population is $50,000$. The infectious disease X has been spreading for some time and your task is to predict its future course. Disease X is not fatal provided the patient's fever is kept down, and full recovery with immunity results in 14 days after infection. Once recovered, the person is no longer infectious. According to your statistics, 2100 people are currently infected and 2500 have recovered. A recent article in the New Guinea Journal of Medicine says that the rate of new infections for disease X can be calculated as $10^{-5}SI$ new infections per day, where S represents the number of people in the susceptible population and I represents the number of infected persons.

Your task is to make some short range and long range predictions. How will the disease X spread over the next few days? What is your prediction for the next month? What is the maximum number of people who will be sick at once? You have until next Wednesday to present some reasonable answers.