PROGRAM INFORMATION

Date submitted: 6/3/13

<table>
<thead>
<tr>
<th>Degree Program(s):</th>
<th>BS Meteorology</th>
<th>Department:</th>
<th>Meteorology &amp; Clim Sci</th>
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<tbody>
<tr>
<td>Department Chair:</td>
<td>Alison Bridger</td>
<td>Phone:</td>
<td>4-5206</td>
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<tr>
<td>Report Prepared by:</td>
<td>Alison Bridger</td>
<td>Phone:</td>
<td>4-5206</td>
</tr>
<tr>
<td>Next Self-Study due:</td>
<td>5 years from now (Action Plan submitted SP13)</td>
<td>E-mail:</td>
<td><a href="mailto:Alison.Bridger@sjsu.edu">Alison.Bridger@sjsu.edu</a></td>
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Note: Schedule is posted at: http://www.sjsu.edu/ugs/programplanning/

ARCHIVAL INFORMATION

<table>
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<tr>
<th>Location:</th>
<th>DH 620</th>
<th>Person to Contact:</th>
<th>Alison Bridger</th>
<th>4-5206</th>
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</table>

(Bldg/Room #) (Name) (Phone)

Assessment schedule is posted at http://www.sjsu.edu/ugs/assessment
Please send any changes to the schedule or to student learning outcomes to Jackie Snell jacqueline.snell@sjsu.edu

Enter the number and text of the SLO in this box (we post reports by SLO)
SLO-2: Be able to explain meteorological phenomena at various scales in terms of basic physical and dynamic processes, including radiative forcing, thermodynamics, microphysics, and dynamics.

Initial Evidence of Student Learning:

During Fall 2012 the faculty decided at an assessment-themed faculty meeting (snacks provided) to address SLO-2 this year. One of the daily practices for National Weather Service (NWS) forecasters is to write an Area Forecast Discussion (AFD). These are produced at every NWS office four times a day. They present a synopsis of current conditions, and of forecasts (over 24 hours) based chiefly on numerical products. The forecaster will very often explain why the forecast is the way it is using his/her background understanding of the physics and dynamics of the atmosphere. He/she will also typically discuss uncertainties in the forecast, as well as their origins.

It was decided to add an element into the senior-level synoptics sequence (MET 171A,B) in which students write an AFD to accompany their other forecasting activities. This provides students with a means to summarize and focus what they have learned in their previous meteorology classes, and apply it to “today’s” forecast. During the semester, students forecast for a wide range of locations and conditions, ranging from heatwaves to raging winter blizzards, to severe weather in spring.

Professor Chiao assessed student performance on the first and last such exercises (one per week per student), and also provided a rubric for guidance. This rubric outlined seven elements to be examined, with five possible “scoring” results ranging from poorest (1) up to best (5=exemplary).
At the start of the Spring 13 semester, 39% of the students were scored at a “2” on this scale, with another 35% scoring at a “3”. In other words, only 16% were proficient. At the end of the semester, 34% scored in the “4-5” range, meaning that their performance was categorized as proficient-exemplary. Meanwhile 45% of the students performed at the “on track” level. These clear improvements are credited to the work Dr. Chiao did with the students during the semester. This included: encouraging them to think in terms of the “big picture”, encouraging them to use professional and appropriate words for our science, and encouraging them to be able to justify (in writing) their work. These are skills needed in many fields of our science, not just forecasting. We believe this was a worthwhile exercise!

**Change(s) to Curriculum or Pedagogy:**
Based on: (a) inserting the task of writing an AFD into the curriculum; (b) assessing student performance at the start and end of the semester; and (c) noting improved student performance during the semester; we believe this was a worthwhile exercise. The task of writing AFDs will therefore be incorporated into the class (MET 171A,B) in future.

**Evidence of Student Learning after Change.**
As the raw data and our analysis above shows, student abilities increased during the semester, as evidenced by their abilities to focus their knowledge into a useful and accurate product, namely the AFD.