

**SJSU Annual Program Assessment Form  
Academic Year 2016-2017**

Department: Meteorology and Climate Science
Program: BS in Meteorology
College: Science
Program Website: <a href="http://www.sjsu.edu/meteorology">www.sjsu.edu/meteorology</a>
Link to Program Learning Outcomes (PLOs) on program website: <a href="#">PLO for Meteorology</a>
Program Accreditation (if any): N/A
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Date of Report: March 6, 2017

**Part A**

**1. List of Program Learning Outcomes (PLOs)**

The PLOs for the Meteorology and Climate Science program follow closely the standards accepted by the American Meteorological Society ([AMS: BS in Meteorology recommendations](#)). The roadmap for the BS in Meteorology, following the guidelines from the AMS, includes courses in Mathematics, Physics, and Chemistry in addition to courses in the department that teach computer programming and statistics. The students take required meteorology courses covering atmospheric dynamics, atmospheric physics, and synoptic meteorology.

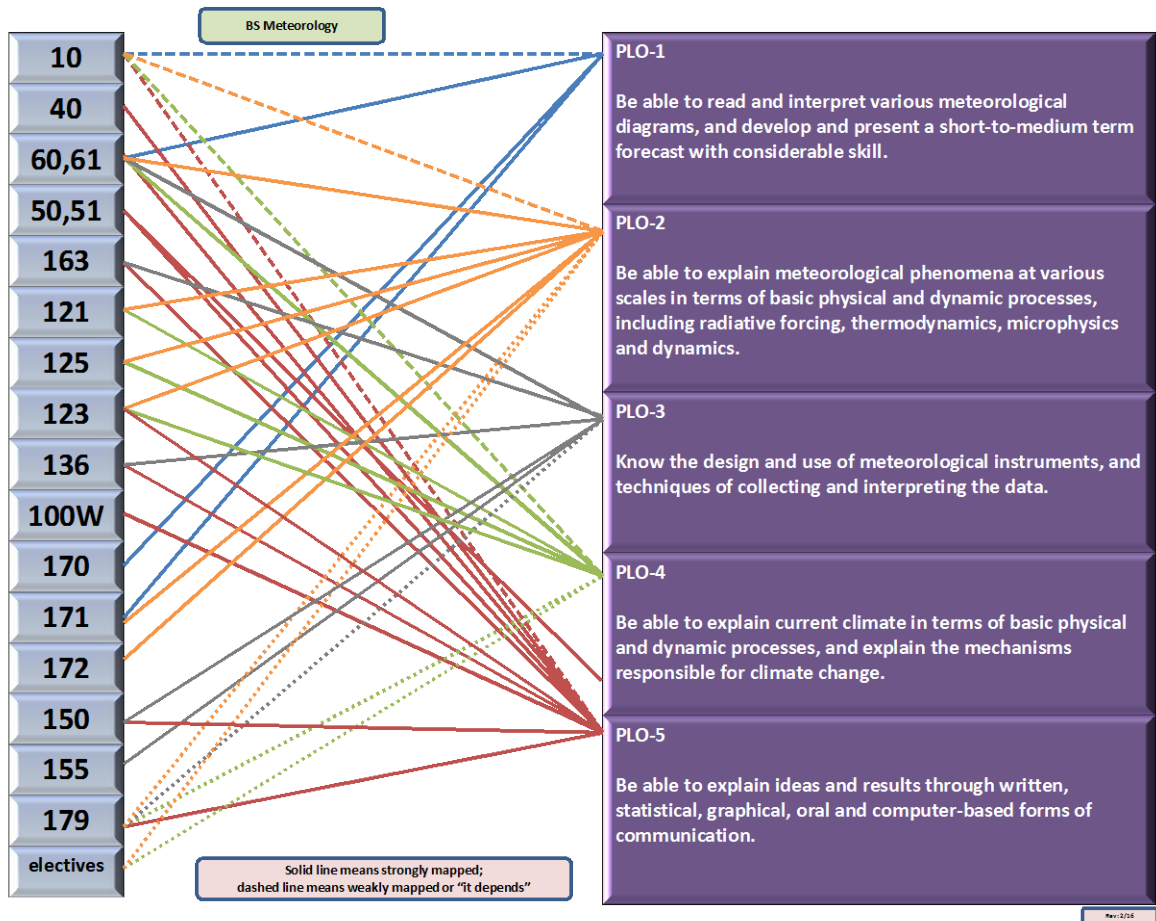
The five PLOs for the BS Meteorology are:

1. Be able to read and interpret various meteorological diagrams, and develop and present a short-to-medium-term forecast with considerable skill.
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.
3. Know the design and use of meteorological instruments, and techniques for collecting and interpreting the data.
4. Be able to explain current climate in terms of basic physical and dynamical processes, and explain the mechanisms responsible for climate change.
5. Be able to explain ideas and results through written, statistical, graphical, oral and computer-based forms of communication.

2. Map of PLOs to [University Learning Goals \(ULGs\)](#)

		BS METEOROLOGY				
university	program	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5
		charts & forecasting	explain met phenomena	met instruments & data	climate	communication
ULG-1	1.1	X	X	X	X	X
ULG-2	2.1	X	X	X	X	X
	2.2	X	X	X	X	
	2.3		X		X	
ULG-3	3.1	X	X	X	X	X
	3.2	X	X	X	X	X
ULG-4	4.1	X	X	X	X	
	4.2	X	X	X	X	X
	4.3	X	X	X	X	X
ULG-5	5.1		X	X	X	
	5.2				GE only	
<b>courses</b>		170,171	60,61,121,125,171	163	112	100W,179,170,171
				60,61,71,123,173,174		

### 3. Alignment – Matrix of PLOs to Courses



### 4. Planning – [Assessment Schedule](#) (per [posted schedule](#) )

	AY 13-14	AY 14-15	AY 15-16	AY 15-16	AY 17-18
PLO 1					
PLO 2					
PLO 3					
PLO 4					
PLO 5					

### 5. Student Experience

- All PLOs are posted online (currently 2 clicks away, but this will be upgraded to 1 click away).
- New this year:** PLO language has been added to the department landing page.
- Faculty have been encouraged by the chair to include language in our greensheets that: (a) mentions the existence of department PLOs; and (b) includes the URL.
- Almost all faculty use the CANVAS system, in which PLOs, rubrics etc. can be easily and readily shared with students.

- e. It has not ever occurred to us to seek feedback from students on PLOs! We wrote them to be clear, and we assume they are clear! Likewise, it has never occurred to us to ask for student feedback on the whole assessment experience! Our students seem happy ☺. **New this year:** We are developing a mini-survey on this which will be discussed next year.

## Part B

### 6. Assessment Data and Results

**In the 15-16 cycle**, we assessed PLO 3: *Know the design and use of meteorological instruments, and techniques for collecting and interpreting the data*. Since the assessment cycle was mysteriously moved up by 3 months, we will report here on your feedback on our report on this from last year.

**In the present 16-17 cycle**, we will assess PLO 4: *Be able to explain current climate in terms of basic physical and dynamical processes, and explain the mechanisms responsible for climate change*. This is going to be tricky, since we're not teaching any courses with the word "climate" in the title this Spring! That's life in small programs for you!!

At the time this report was due (3/1/17), we had not yet collected any data for this years exercise, leaving nothing to discuss.

Going back to PLO 3 from last year, many of our courses address this PLO as the mapping shows. We chose to use data gathered in METR 163 and the METR 60 lab.

"Assessment" is a topic that appears as an agenda item for virtually every faculty meeting over the last several years. In many ways, assessment is never not under discussion amongst the faculty. Things we discuss every Spring include: (i) which PLO are we scheduled to assess this year? (ii) in which course(s) should we assess this PLO? (iii) which faculty member(s) will be the point man/woman in developing the data and communicating with our assessment coordinator? (iv) what timelines should we adopt? And then things we discuss every Fall include: (i) which PLO have we just assessed? (ii) what did our analysis show? (iii) did our analysis reveal any problems, and if so, how can we fix these? (iv) which lucky faculty member is in charge of said fixes (whenever fixes are clearly needed in one particular class, as opposed to across the curriculum)? (v) how are we "closing the loop"? This pattern continues to this day.

In Spring 16, in one of these faculty meetings, we identified the classes we identified (163 & 60), upon which the assessment coordinator and faculty worked out the details, gathered the data and wrote the report. At this point there was a fracture in the system, viz the chair did not notice that faculty were using midterm grades (from 163) as an indicator of meetage of PLO 3. When this arrangement was discussed @ faculty meeting, the chair should have popped up and reminded faculty that that's a no-no, so we will all be on the lookout for this in future.

This appears to have been the main issue with the assessment of PLO 3 in METR 163 in Spring 16. METR 163 is popular with the students, since they are working in the lab as well as on the roof, and have 1-2 field trips during the semester. They emerge with skills that readily translate to the workforce. We rarely have a student who flunks the course. Thus, with 20-20 hindsight and with an eye towards job placement of graduates from our program in the last 5-10 years, we are confident that the PLO is being adequately covered. And we agree we did the assessment wrong last year.

In terms of "closing the loop" on this PLO, *Know the design and use of meteorological instruments, and techniques for collecting and interpreting the data*, as stated, we continue to be happy with this course and we believe student gain valuable skills from it. The evidence is probably a bit too circumstantial for

the campus assessmeters. One issue that has been under discussion for a few years is whether we should drop back to teaching this class every other year (due to small enrollments and budget pressure). Having the class every year, we believe, allows the cohort to bond well since there are elbow-to-elbow in the lab and also in the field. This is particularly important as student move into the junior and senior years, since those classes are more technical/difficult. We firmly believe – based on our assessment efforts as well as circumstantial evidence – that the class should be offered every year. For us, this constitutes “closing the loop” on this PLO.

**7. Analysis**

This was covered directly above.

**8. Proposed changes and goals (if any)**

First, we will effort to address assessment of PLOs via preferred metrics. Second, given the popularity of this course and our success in placing some of our students into field-intensive jobs, we believe our students *are* achieving this PLO, and thus we have no plans at this time to make any major changes. We offer the class in the sophomore spring, and we firmly believe that’s where it belongs. We’re going to be in deep trouble if a handicapped student every shows up (since lab is on a non-accessible floor), but we’ve been warning the campus about this situation for over 20 years now. We will continue to encourage faculty to: (i) advertise PLOs; (ii) include rubrics in all assessment activities; and (iii) gather appropriate data for assessment.

**Part C**

Is this part new? I can’t find anything to go back and compare with...

<b>Proposed Changes and Goals</b>	<b>Status Update</b>
Be sure to mention department PLOs in all majors greensheets	Pending
Effort to use rubrics more widely	Pending
Base assessment on specific activities (e.g., tailored questions on midterms), as opposed to midterm grades	Pending