SJSU Annual Program Assessment Form
Academic Year 2013-2014

Electronic copy of report is due June 1, 2014. Send to Undergraduate Studies (academicassessment@sjsu.edu), with cc: to your college's Associate Dean and college Assessment Facilitator.

Department: Meteorology & Climate Science
Programs: BS Meteorology, BS Meteorology concentration Climate Science, MS Meteorology

College: Science
Website: www.sjsu.edu/meteorology
X Check here if your website addresses the University Learning Goals.
www.sjsu.edu/meteorology/undergraduates/assessment/index.html
Program Accreditation (if any): N/A
Contact Person and Email: Prof. Alison Bridger… alison.bridger@sjsu.edu

Date of Report: 4/4/2014-5/29/14

Part A

1. **List of Program Learning Outcomes (PLOs)**
   PLOs (and other information) are (is) listed at are our Department Assessment site:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/index.html
   and specifically the BS-Meteorology PLOs are available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/New%20Learning%20Outcomes%20BSmet.pdf
   The BS Meteorology list differs from the first list we constructed. After reflection, and informed by a few years of assessment activities, we refined the original list to the current list, which is therefore the second generation of PLOs. These discussions take place in both faculty meetings and at annual department assessment workshops. All faculty are invited and typically attend and provide input (tenured, tenure-track, part-time).
   The BS-Meteorology, concentration Climate Science PLOs are available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/New%20Learning%20Outcomes%20BSclim.pdf
   This is the first generation of PLOs for this, a new concentration. We are just graduating the first group of students in this concentration in Spring 2014.
   The MS-Meteorology PLOs are available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/New%20Learning%20Outcomes%20MSmet.pdf
   These too have been revised since the assessment activities begun. We revised the initial five PLOs down to three.

2. **Map of PLOs to University Learning Goals (ULGs)**
   The mapping of BS-Meteorology PLOs into ULGS is available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-ULO-BSmeteorology%20map.pdf
   The mapping of BS-Meteorology, concentration Climate Science PLOs into ULGS is available at:

http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-ULO-BSclimsci%20map.pdf
The mapping of MS-Meteorology PLOs into ULGS is available at:
http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-ULO-MSmeteorology%20map.pdf

3. **Alignment – Matrix of PLOs to Courses**
   For the BS-Meteorology program, our mapping of PLOs into courses is available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-mapping-BSmetr.pdf
   For the BS-Meteorology, concentration Climate Science program, our mapping of PLOs into courses is available at: http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-mapping-BSclim.pdf
   For the MS-Meteorology program, our mapping of PLOs into courses is available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/PLO-mapping-MSmetr.pdf

4. **Planning – Assessment Schedule**
   For the BS-Meteorology program, our assessment plan of attack is available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/timelines-BS-metr.pdf
   For the BS-Meteorology program, concentration Climate Science program, our assessment plan of attack is available at: http://www.sjsu.edu/meteorology/undergraduates/assessment/timelines-BS-clim.pdf
   For the MS-Meteorology program, our assessment plan of attack is available at:
   http://www.sjsu.edu/meteorology/undergraduates/assessment/timelines-MS-metr.pdf
   We are continually reviewing our course offerings, both the curriculum within a course, and when – and even if – the course will be offered. As that process unfolds, we may make edits to any and all of the above.

5. **Student Experience**
   From our main SJSU webpage, a single click (under both "undergraduates" and "graduates" tabs) takes the visitor to our information-packed "assessment" webpage. From here, everything we have ever been asked to provide is linked and easily found. Thus, students and guests may easily find all assessment information without our prompting. At the same time, we encourage faculty now to add links to our assessment thoughts on their greensheets. One faculty member currently includes this language on her most recent graduate class greensheet: "The department has identified a set of "program learning outcomes" (PLOs) for the MS-Meteorology program. These – and related material – are posted at http://www.sjsu.edu/meteorology/undergraduates/assessment/index.html". So there you go. We've never received any feedback on PLOs from students, nor have we solicited any. It's interesting to consider how they might feel about the subject – perhaps we will ask them!

Part B

6. **Graduation Rates for Total, Non URM and URM students (per program and degree)**
   From the IEA website at http://www.iea.sjsu.edu/ under Retention/Graduation, the following incomprehensible numbers are listed for 2007 entering freshmen and 2010 entering transfers and graduate students (see data sheet attached):
   FTF entering=4 (sounds awfully low)
   FTF graduation rate = 50%, consisting of 0% for URM and 50%=100% for non-URM
   - A 50% drop-out rate during the first two years of our program is consistent with what we've

seen for decades: it's mostly the math that gets them.

Transfer entering=6

Transfer graduation rate = 66.7%, consisting of 100% for URM and 60% for non-URM

- These graduation numbers do not astonish us.

Graduate entering=7

Graduate graduation rate = 60%, all non-URM

- Two of the entering MS students have not yet graduated. Without seeing names, it's difficult to know why – they may still be here and working!

The "concentration Climate Science has only just reached the four year mark, so comparable data are not yet available, and admissions data was not provided.

We have one comment on these numbers; the large majority of students who make it past our sophomore classes (60,61,163) and into our junior classes (121A,B etc.) ***do*** graduate. I do not have statistics, but in many years the number is 100%. Our program leaks students at two points: (a) the majority fail when they take/fail calculus (and pre-calc) classes; (b) a smaller number fail during the sophomore-level classes. Roughly, given 20 FTF, I would expect 10-15 to make it to our sophomore-level meteorology classes, and about 8-12 to make it to the junior-level classes (and then graduate). These statistics do not appear to have changed much since the 1980's.

7. **Headcounts of program majors and new students (per program and degree)**

See data sheet attached for original numbers for Fall 2013. The "total" numbers provided are: 11, 3, 0, 4, 33, 0, 11, 47, 0, and 15. No separate data are provided for the Climate Science concentration.

Comments: we would love to improve: (a) the number of applications; and (b) the show rate. This summer, we are resurrecting a process to contact high school students who have shown an interest in meteorology etc. We will try to improve the number of applications this way.

8. **SFR and average section size (per program)**

The below numbers were scraped from the IEA website; see also the attached numbers.

	2006	2007	2008	2009	2010	2011	2012	2013
SFR	18.9	20.7	17.8	20.4	23.8	18.6	17.9	21.0
FTES	114.7	125.8	151.5	138.4	160.7	153.4	156.1	136.5
FTEF	6.1	6.1	8.5	6.8	6.7	8.2	8.7	6.6

These values are exceptionally interesting, in that they rise and fall. The rises and falls do not appear to be predictable, rather like the weather. The numbers are as high as 160.7, and as low as 6.1. Any way you look at the numbers, they clearly support our claim that we are doing more with less.

The graduate numbers (see attached sheet) are: 7.0 and 3.4. These too are very informative.

Overall, we are very happy with these numbers.

9. **Percentage of tenured/tenure-track instructional faculty (per department)**

These numbers were also carefully extracted from the IEA website; see also the less-informative attached numbers.

	2009/10	2010/11	2011/12	2012/13	2013/14
Tenured	3	2	2	3	2.7
Probationary	2	2	3	3	2.1
Lecturer	2.6	2.8	3.6	3.1	2.8
Total	7.6	6.8	8.6	9.1	7.6
Fraction of interest	66%	59%	58%	66%	63%

First, we are unclear as to how it is possible to have a fraction of a tenured faculty member, since all of our tenured faculty are whole-bodied; we cannot account for the university's assertion that we have 2.7 tenured faculty in AY 2013/14. Similarly, we are unclear how it is possible to have a fraction of a tenure-track faculty member, since by our count we have three of them (not 2.1). Other than that, and as the data clearly show, we are jogging along at roughly the 65% level. In the current year, my math shows us at the 63% level, whereas IEA has us at 60.2%. We are investigating the discrepancy.

Part C

10. **Closing the Loop/Recommended Actions**

All programs: In terms of closing the loop on our previous AY 11-12 assessment activities, assessment data and findings were discussed at faculty meetings during AY 12-13. Faculty felt that nothing needed to be changed – and thus we made no changes.

11. **Assessment Data**

BS Meteorology: In AY 12-13, we assessed PLO#5, namely "be able to explain ideas and results through written, statistical, oral and computer-based forms of communication". Our seniors take a senior thesis class (METR 179) in which they identify a research project, conduct research through the year, and complete the class by: (i) writing a thesis in approved/required AMS style; and (ii) presenting their work to all students and faculty in a department seminar. Our assessment data was gathered during this final meeting of the Spring 13 semester. A short assessment form was filled in by every attendee, and asked for responses to prompts such as "Within the first two minutes, it was very clear to me what the research topic was". The data was gathered, tabulated and statistically analyzed.

BS Meteorology, concentration Climate Science: AY 12-13 was year three of this 4-year program, and this was the first group of students in that year. Per the roadmap at http://www.met.sjsu.edu/advising/Four%20Year%20Roadmap%20-%20CliSci.pdf students in year three take electives largely outside of METR. Hence we felt no call to conduct assessment during AY 12-13. Note that we *have* gathered assessment data this year (Spring 2014).

MS Meteorology: Nobody has any memory of gathering assessment data in our MS program during AY 12-13. Recently we have had part-time faculty teaching our graduate classes (due to staffing

shortages), and since their teaching load is so high, it's difficult to remember to do assessment on top of everything else. Note that we *have* gathered assessment data this year (Spring 2014).

12. **Analysis**

BS Meteorology: Nine students presented their work at the seminar. For each, we gathered responses to eight prompts, as well as an overall score. The overall score ranged from a "5"=excellent, "4"=good, "3"=fair, "2"=not very good, to a "1"=awful. Respondents included faculty and students (grad/undergrad, including the other class members). Of the nine students, overall scores ranged from a 5.0 to a 2.3. Of the nine students, seven received overall scores of 4.2-5.0. By all measures, we can say that these seven students ***did*** successfully meet the outcome listed above. Of these seven students, several did excellent project work and gave excellent presentations. Some did mediocre project work but gave excellent presentations. Of the nine seniors, one clearly failed to meet the PLO. He did poor work and gave a poor presentation (overall score 2.3). Despite this (and bland recommendation letters from faculty), that student was subsequently accepted into an MS program (out of state). Finally of the nine seniors, one other student also did low-quality research work, and gave a marginal presentation (overall 3.7). That student is graduating a year late due to poor performance in classes.

In summary, we are happy with having seven very good and one mediocre presentations out of nine students, meaning seven very good student performances, and one mediocre and one poor performance. Our assessment analysis revealed that the student we had already identified as weak was – weak. One weak student out of nine is a good statistic.

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

BS Meteorology: The analysis was discussed at a faculty meeting. As I mentioned, our assessment activity revealed that the student we had already identified as weak was weak. There will be at least one similarly weak student in this year's senior cohort (Spring 2014). The faculty decided that no remedial action is needed with the senior thesis class/experience. Every year, the expectations for the class are made clear, and the majority of the students do a good-to-excellent job of their research + thesis writing + presentation. Students who fail to complete the task are not given a free pass; they are required to finish the work in the summer or following year. At present we have no ideas on how to "make" weaker students do better-quality work. The faculty believe that the senior thesis is a valuable activity in terms of providing "real world" skills, and that there are other areas of the curriculum that deserve more attention.

6. Graduation Rates for Total, Non URM and URM Students by Program

Note: URM = African-American, Hispanic, and Americam-Indians; Non-URM = White and Asian/Pacific Islander; Other = Other and Foreign

Academic Programs		First-time Freshmen: 6 Year Graduation Rates		New UG Transfers: 3 Year Graduation Rates		Grads : 3 Year Graduation Rates	
		Fall 2007 Cohort		Fall 2010 Cohort		Fall 2010 Cohort	
		Entering	% Grad	Entering	% Grad	Entering	% Grad
Meteorology	**Total**	**4**	**50.0%**	**6**	**66.7%**	**7**	**42.9%**
	URM	0	0.0%	1	100.0%	0	0.0%
	Non-URM	4	50.0%	5	60.0%	5	60.0%
	Other	0	0.0%	0	0.0%	2	0.0%

7. Headcount of Program Majors and New Students by Programs and Degree

Note: 1st Fr. = First-time Freshmen; Transf = Transfer Students; UGs = Undergraduate Students; Creds = Credential Students; Grads = Graduate Students

		Fall 2013									
		New Students				Cont. Students			Total		
Meteorology	Degree	1st Fr.	UG Transf	New Creds	1st Grads	UGs	Creds	Grads	UGs	Creds	Grads
	Total	**11**	**3**	**0**	**4**	**33**	**0**	**11**	**47**	**0**	**15**
	BS	11	3	0	0	33	0	0	47	0	0
	MS	0	0	0	4	0	0	11	0	0	15

8. SFR (Exhibit 3) and Average Headcount per Section (Exhibit 2) by Course Prefix

		Fall 2013	
Course Prefix	**Course Level**	Student to Faculty Ratio (SFR)	Average Headcount per Section
METR - Meteorology	**Total**	**20.3**	**19.8**
	Lower Division	34.0	37.4
	Upper Division	16.6	21.3
	Graduate Division	7.0	3.4

9. Percentage of Full-time Equivalent Faculty (FTEF) for tenured/tenure-track instructional faculty by Department

	Fall 2013			
	% Tenured/Prob	Tenured	Temp Lecturer	Probationary
Meteorology	60.2%	1.61	2.466	2.114