

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	



**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	

**Earth System Science 200a: Earth System Climatology (Fall 2007)**  
(<http://www.ess.uci.edu/~yu/ess200a.html>)

Professor Jin-Yi Yu  
CH3315, 824-3878, [jyyu@uci.edu](mailto:jyyu@uci.edu)

**Tuesdays & Thursdays 9:00-10:20, CH1103**

**COURSE DESCRIPTION**

This course offers an overview of Earth's climate system by describing the major climatological features in the atmosphere and oceans and by explaining the physical principals behind them. The course begins with an introduction of the global energy balance that drives motions in the atmosphere and oceans, then describes the basic structures and general circulations of the atmosphere and oceans, and finally look into major climate change and variation phenomena.

**TEXTBOOKS**

"*The Earth System*", Kump, Kasting & Crane, Prentice Hall.  
"*Understanding Weather and Climate*", by Aguado and Burt, Prentice Hall.  
"*Regional Oceanography: An Introduction*", Tomczak & Godfrey, online.  
"*Global Physical Climatology*", Hartmann, Academic Press, 1994.  
"*Climatology: An Atmospheric Science*", Oliver and Hidore, Prentice Hall.

**GRADES**: Homework (40%); midterm (60%)

**HOMEWORKS**: Issue and due every Thursday

**SYLLABUS**

Week 1	09/27,10/02,10/04	<b>Global Energy Balance</b> Atmosphere Composition; Planetary Energy Balance Greenhouse Effect; Role of Cloud
Week 2	<b>10/09*</b> & 10/11 *(no class on 10/09)	<b>Atmospheric General Circulation</b> General Circulation in the Troposphere and Stratosphere Jetstreams; Walker Circulation Monsoon, Sea-land Breeze, Santa Ana Wind
Week 3	10/16 & 10/18	<b>Oceanic General Circulation</b> Ocean Structure; Mixed layer, Ekman Layer, and Thermocline Water Mass Formation, Ekman Pumping, and Subduction Surface Ocean Circulation: Wind-Driven Deep Ocean Circulation: Density-Driven Pacific Ocean, Atlantic Ocean, and Indian Ocean Cryosphere
Week 4	10/23 & 10/25	<b>Climate Change and Variability</b> Past Climate Changes El Niño Southern Oscillation; Arctic Oscillation; Ozone Hole
Week 5	10/30 & 11/01	<b>Weather; Satellite Observations</b> Air Masses, Fronts; Major High and Low Pressure Systems Mid-Latitude Cyclones; Tropical Hurricane Satellite Observations
<b><u>Midterm</u></b>	<b>11/09 (Friday)</b>	