Eight Years of ESPP
Director Report

Jinhua Zhao
May 1, 2018
ESPP’s Mission

Umbrella organization to promote MSU’s interdisciplinary environmental scholarship

Specific goals

- Build graduate environmental education programs that are innovative, interdisciplinary and campus wide;
- Facilitate interdisciplinary environmental research at MSU, and
- Make MSU's areas of excellence better connected with and more visible in national and global efforts.
Broader participation

ESPP FACULTY AFFILIATION

2010  2018

APPOINTED FACULTY

16

AFFILIATED FACULTY

180

239
Faculty affiliation:
63 departments, 13 colleges
ESPP portfolio: 2010 snapshot

Graduate Education

Doctoral Specialization in ESP

Fellowship/grants

Community

Interdisciplinary Research

Workshops

Grant support

Integration

Student Seminar Series
Improvements of existing programs

Graduate Education

Doctoral dual major in ESP

Fellowship/grants

Community

Interdisciplinary Research

Workshops

Grant support

Integration

Research Colloquia Series
ESPP’s Portfolio: current snapshot

Graduate Education
- Doctoral dual major in ESP
- Modeling Certificate
- Water/Global Commerce Certificate
- Fellowship/grants
- Community
- Water (next)

Interdisciplinary Research
- Workshops
- ITBI/Workgroups
- VISTAS
- Water Science Network
- Grant support

Integration
- ESPP Research Symposia
- Research Colloquia Series
- Fate of the Earth Conference
- Michigan Climate Coalition
ESP Doctoral Specialization

 completamente revamped core courses, ESP 800, 801, 802
  - Modular based
  - New instructors
  - ESP 800 routinely attract a large number of non-specialization students (almost 30 students this spring)

Dual major officially approved: overwhelming response from students
New enrollment in specialization/dual major

![Chart showing enrollment trends from 2004 to 2018 for various fields and total enrollment.](chart.png)
Current enrollment in dual major

2018

EGR  CANR  CAL  CSS  CNS  CAS

2018
Specialization graduates: 39 out of 51 in academic positions
ESPP Recruiting fellowship

2010 snapshot
– 5 fellowships (3 from Graduate School, 1 from CSS, 1 from CANR), $30K each

2018 snapshot
– 5 fellowships (3 from Graduate School, 1 from CSS, 1 from CANR), $50K each (thank you!)
– CNS and COE: designed 1 – 3 college fellowships to ESPP.
– Restructured: early immersion into research
Student community building

- Essential experience in building interdisciplinary cohorts/communities
- Designated student advisor
- Enriched activities
  - Leadership opportunities: organize and participate in Research Symposium, Research Colloquia
  - Group meetings with DLS speakers
  - Active participation in Fate of the Earth conference
  - Annual student town hall meeting
ESPP Summer Research Fellowships

- Emphasize research teams as well as student scholarship
- Recipients present at fall research symposium

Themes

- 2018: CFEW (12)
- 2017: Urban environment (12)
- 2016: CFEW (17)
Student travel grants: open to all students

Travel grants awarded (by college)

- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017

Legend:
- other
- CAS
- CNS
- CSS
- CAL
- CANR
- EGR
Graduate modeling certificate

Completed and Current Certificate Students by College

Completed and Current

<table>
<thead>
<tr>
<th>College</th>
<th>Completed</th>
<th>Current</th>
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<tbody>
<tr>
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<tr>
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<td>1</td>
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<tr>
<td>CNS</td>
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<tr>
<td>CSS</td>
<td>6</td>
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Completed: blue bars
Current: red bars
Next: graduate water curriculum

Goal: create a dual major in water
  – Models: EEBB, ESPP

Water Committee working with Drs. Kelly Millenbah (CANR Associate Dean and Director for Academic and Student Affairs) and James Lucas (Assistant Dean of Global Education and Curriculum)
Potential Cross- and Sub-Themes

Water Security

Water Science

Water Technology

Water Diplomacy

Water Use – Climate Change – Resource Management
Timeline

- Spring-Summer 2018
  - Develop curriculum
  - Engage faculty for feedback

- Fall 2018
  - Start approval process

- Fall 2019
  - First cohort starts
Research support

- Launched workgroups: small core group of researchers for collaboration
- Experimented with top down, bottom up, mixed approaches
- Eventually: two signature programs
  - ITBI with AgBio: to help build up new teams and enhance existing teams
  - VISTAS: to help collaboration with non-MSU researchers in grant proposals
Interdisciplinary Team Building Initiative: partnership between ESPP and AgBio

ITBI grant disbursement (by college)

- CANR
- CSS
- CAL
- EGR

Yearly disbursement by college from 2014 to 2017.
## ITBI teams supported

<table>
<thead>
<tr>
<th>DATE OF FUNDING</th>
<th>PIS</th>
<th>College</th>
<th>AMOUNT</th>
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<tr>
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<td>McCright et al.</td>
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<tr>
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<td>F 2014</td>
<td>Chen et al.</td>
<td>CSS</td>
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<tr>
<td>F 2014</td>
<td>Valles et al.</td>
<td>CAL</td>
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<td>F 2015</td>
<td>Hamm et al.</td>
<td>CSS</td>
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<tr>
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<tr>
<td>SP 2017</td>
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<td>CANR</td>
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<tr>
<td>TOTAL</td>
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<td></td>
<td>$96,530</td>
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## ITBl teams: grants received

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<td>2016</td>
<td>Bonito</td>
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<tr>
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<td>Evans</td>
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<td>$5,771,832</td>
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<td>2015</td>
<td>Saffron</td>
<td>Michigan Soybean Promotion Committee</td>
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<td>MTRAC</td>
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<tr>
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<td>Schock</td>
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<td>2015</td>
<td>Sturtevant</td>
<td>Joint Fire Science Program</td>
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<td>2015</td>
<td>Tiemann</td>
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## ITBI teams: grants submitted

<table>
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<td>Zhang</td>
<td>USDA NIFA</td>
<td>n/a</td>
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<td>2017</td>
<td>Miesel</td>
<td>Michigan Dept. Ag</td>
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<td>2015</td>
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<td>NSF</td>
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<td>Hamm</td>
<td>NSF</td>
<td>$990,961</td>
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</table>
Visiting Scholars to Advance Science

VISTAS dollars (by college)

- EGR
- CANR
- CSS
- CNS

2013 2014 2015 2016 2017
# VISTAS: grants received

<table>
<thead>
<tr>
<th>Date</th>
<th>Pis</th>
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<td>Li</td>
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<td>2015</td>
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<td>2014</td>
<td>Tarabara</td>
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<td>2014</td>
<td>Wagner</td>
<td>Great Lakes Fishery Commission</td>
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## VISTAS: grants submitted

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<td>NSF</td>
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<td>Medina</td>
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<td>2017</td>
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<td>Novak</td>
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<td>Salim</td>
<td>Agropolis Foundation</td>
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<tr>
<td>2016</td>
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<td>National Center for Ecological Analysis and Synthesis</td>
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<tr>
<td>2016</td>
<td>Benbow</td>
<td>NSF</td>
<td>Preliminary proposal</td>
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WaterCube Highlights

- Over $6.6 million in external funding
  - Up to 2017: $2.5m
  - Up to 2016: $0.8m

- 38 peer-reviewed publications

- 33 students and post-docs supported

- New advancements in water science
Excerpts from program feedback

“The WaterCube program clearly afforded an opportunity for the three PI’s to collaborate that would not likely have happened otherwise.”

“The WaterCube funding has been instrumental in the fruition of this exploratory research. It is likely that [our] research would have never happened without it.”

“The WaterCube funding provided a valuable resource for our team in that it served to create an environment where geomicrobiologists, public health microbiologists, hydrogeologists, and bioinformaticists could bring to bear their unique expertise on a focused research problem.”

“We feel that the WaterCube made it possible to obtain data for successful proposals that our team members have received, and will continue to help with future funding and successful research programs of the project participants. In addition, the WaterCube helped join 5 PIs that had not worked together as a group before - a group spanning terrestrial and aquatic science across scales.”
ESPP Research Symposium

⏰ 2017 theme: urban environment
⏰ Participation: 121 students, faculty and researchers.
  – Oral presentation and posters
⏰ Previous themes:
  – 2016: Environmental health
  – 2015: International environmental research
  – 2014: Environmental risk and decision making
  – 2013: Water for a Sustainable World
⏰ 2018 theme: CFEW (climate-food-energy-water)
ESPP Research Symposium participation

Student Research Symposium Attendees by College

- EGR
- ANR
- CSS
- CNS
- Other

ESPP Research Colloquia Series

ESPP hosts a Research Colloquia Series that includes student and expert panel discussions, faculty roundtables, guest lectures and debates. The 2017-2018 Colloquia series include presentations on:

- Urbanization and Sustainability
- The Battle for Michigan’s Fish: Using a Novel Interview Technique to Quantify Risk Perception and Inform Outreach
- Social Inequality and Environmental Justice
- Sustainable Food Systems in Developing Countries
- Perceptions of Emerging Biotechnologies
- Freshwater Security in the Great Lakes Region
- Local and Global Interfaces—Why the Environment Matters
Broad spectrum of participants in colloquia
ESPP Distinguished Lecture Series

- Partnership with departments
  - Additional department seminars and meetings
- Transition to Donald Koch Fate of the Earth Distinguished Lecture Series
- 2017 DLS speakers
  - Dr. Soroosh Sorooshian, Distinguished Professor of Civil and Environmental Engineering and Earth System Science, University of California-Irvine
    - “Climate Change and The Global Hydrologic Cycle: Efforts in Monitoring, Modeling and Ability to Forecast Changes” Feb. 27, 2017
  - Carl Bruch, Director of International Programs and Senior Attorney at the Environmental Law Institute, Washington, D.C.
    - “From Agent Orange to Climate Security: The Emerging Field of Environmental Peacebuilding” March 21, 2017
  - Dr. Menachem Elimelech, Professor of Chemical and Environmental Engineering, Yale University
    - “High Performance Membranes for Energy Efficient Desalination and Wastewater Reuse” March 22, 2017
  - Henry Cisneros, former U.S. Secretary of Housing and Development
    - “Cities and the Economy, Smart Growth and Sustainability and American Latinos and the Nation’s Future” Oct. 11, 2017
  - Dr. Harsha Ratnaweera, Norwegian University of Life Sciences
    - “The Evolution of Wastewater Treatment in Norway” Oct. 26, 2017
Fate of the Earth Symposium

- FoE endowment: student and community participation
- Experimented with different formats
  - 1 + 1: community + academic
  - 1 + 1.5: community + academic + workshop/products
  - 2018: 1 (community) + DLS
- Themes:
  - 2018: Community (and hope)
  - 2017: CFEW (Water)
  - 2016: CFEW
  - 2015: tipping points and nonlinearities
  - 2014: frontier of env research
- Drawing participants from beyond MSU. E.g., 2018:
  - Michigan Department of Environmental Quality, The Nature Conservancy, Flint Center for Health Equity Solutions, University of Michigan, The Moyer Group, Red Cedar Fly Fishers, and a wide range of private citizens and MSU alumni.
FoE Symposium Attendance

2018: 256 (132 from MSU, 64 students)

Attendance by affiliation

Attendance by college

<table>
<thead>
<tr>
<th>College</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tr>
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<tr>
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<td>CSS</td>
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<tr>
<td>CNS</td>
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<tr>
<td>Other</td>
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</table>
Administration

- By-law: revised and voted
- Standing committees: Faculty Advisory Council, Graduate Program Council
- Equity: across disciplines, colleges, ranks, gender
- Communication: new webpage, new logo, ESPPulse
- Alumni relation: contacts with all.
So what did I learn?

- Bottom up works better, but from whom?
  - Incentivize *productive* faculty: somehow they need to see the value of our activities
  - Mechanisms to draw them in: direct contacts, actively seeking feedback/input

- The power of aggregation: tipping point for “attention” and “interest”

- Collaboration with other campus units

- Value of “intangible assets”
Thank you!