

# NW-AIRQUEST Annual Workplan Update

NW-AIRQUEST ANNUAL MEETING

8 JUNE 2021

VON P. WALDEN AND JOE VAUGHAN  
FOR LAR/CEE/VCEA/WSU

# New Personnel

# Amin Vahidi – new postdoc

UNOFFICIAL – STILL IN THE HIRING PROCESS...

## EDUCATION

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- Ph.D., Environmental Engineering, 07/2020  
University of Tehran, Tehran, Iran  
Supervisors: Dr. Khosro Ashrafi, Dr. Majid Shafiepour Motlagh  
Dissertation: Analysis of Dispersion, Wet-Dry Deposition and Interactions of Mercury in Air of Tehran city Using Modeling  
GPA: 16.56/20.00
  - Visiting Scholar, 04/2018  
Department of Civil & Environmental Engineering,  
Clarkson University, Potsdam, NY, USA  
Supervisor: Prof. Thomas M. Holsen
  - M.S., Environmental Engineering, 09/2013  
University of Tehran, Tehran, Iran  
Thesis: Improvement of the particles transfer system of an industrial unit using numerical solution  
GPA: 16.83/20.00
  - B.S., Civil Engineering, 07/2009  
Qom University, Qom, Iran
- Has experience with WRF-SMOKE-CMAQ
  - PhD involved simulating dispersion and deposition of mercury over Tehran

# Budgets for 2021 and 2022

# BUDGET STATUS FOR FY2021

Projected Budget for 6/30/2021 (12 months into first year of biennial budget)

	A	B	C	D	E	F
<b>1</b>	<b>Estimate for 2021</b>	<b>pay per 1/2 month</b>	<b>Benefits per tuition</b>		<b>f&amp;a</b>	<b>total forecast</b>
2	Mahshid 4/16 - 5/16	1142.75	190.84		160.0308	\$2,987.24
3	Joe 4/16 to 6/30	1617.97	786.08		288.486	\$13,462.68
4	Ana - summer	954.50	14.69	1725	116.3028	\$4,981.48
5	Mashid summer	1142.75	14.69	1725	138.8928	\$5,614.00
6	Post doc June	5000.00	1345		2201.715	\$8,546.72
7	UI	394.56			47.3476	\$441.91
8	Equip	5k - no f&a				\$5,000.00
9	Postdoc ad					\$100.00
10						
11	budget	120000				
12	expense	38440.28				
13	forecast	41134.02				
14	<b>REQUESTED CARRY-OVER</b>	<b>40425.70</b>				

# PROJECTED BUDGET FOR FY2022

## Projected Budget for 2022

<b>Rough Expense Estimates for 2022</b>					
Ana Carla - Fall + Spring + June 2022	20615	4000	13755	2953.8	\$41,323.80
Amin - Postdoc 2022	60000	16140		26420.58	\$102,560.58
NKN web services	5000	5000	5000	5000	\$5,000.00
HPC hardware	10000				\$10,000.00
<b>Estimated salary costs for 2022</b>					<b>\$158,884.38</b>
Carry-over + 2022 budget					\$160,425.70

Funding has also been committed from the WSU CEE department; partial funding for new postdoc and TAs, if needed.

# Carry-Forward Tasks

# TASKS CARRIED FORWARD TO 2021-2022

FY2022 Task	Comments	Timeline
Create updated <b>AIRPACT6</b> forecasting framework to accommodate changes in computation platform and implement component updates/upgrades	<i>Compiler bug has been fixed.</i>  <i>Now proceeding with compiling required libraries for use by AIRPACT6</i>	Nov 2021

# TASKS CARRIED FORWARD TO 2021-2022

FY2022 Task	Comments	Timeline
Update biogenics to MEGAN v3 in AIRPACT6 (possibly with HPC parallelization) in AIRPACT6	<i>Pending progress on building AIRPACT6 on new HPC (MEGAN v3 will take unique coding for parallelizing)</i>	Dec 2021
Extend the AIRPACT forecast period from 48 h (2 days) to 72 h (3 days), in AIRPACT6		Jan 2022
Case studies for ozone and PM2.5 for events using new AIRPACT6 system (rerunning previous events for evaluation and study)		Mar 2022



## TASKS CARRIED FORWARD TO 2021-2022

FY2022 Task	Comments	Timeline
Implement the Simple Air Quality Model (PSCAA) for PM2.5 in Tacoma, in AIRPACT6	<p><i>In progress:</i></p> <p><i>Phil S. had issues with new WSU VPN requirement but can now log onto WSU cluster.</i></p> <p><i>Working on providing set of parameters for entire domain</i></p>	Dec 2021?

# TASKS CARRIED FORWARD TO 2021-2022

FY2022 Task	Comments	Timeline
Interpolate ML forecasts for ozone and PM2.5 to provide domain-wide forecasts, using AIRPACT5 or 6.	<i>To be continued by newly supported graduate student, Ana Carla Fernandez-Valdes</i>	Started in May 2021; on-going
Incorporate existing sensor networks (Urbanova, Purple Air, ...) into ML forecasting system.		Dec 2021

## TASKS CARRIED FORWARD TO 2021-2022

FY2022 Task	Comments	Timeline
Experimental drone flights of opportunity to study wintertime inversion conditions (e.g., Pinehurst, ID).	<i>On hold due to covid-19 pandemic</i>	As needed going forward

# Proposed Deliverables

# DELIVERABLES

## FY2022 Deliverables

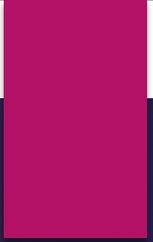
Continued support for On-going Tasks (see Joe Vaughan's status)

### **AIRPACT6 framework**

Improvements to Machine Learning (ML) forecasts for PM2.5 and ozone

Support for implementation of SAQM forecast system (with Phil S.)

Final Report



Requests and/or  
Suggestions  
for New Tasks?