

# The SWAT Literature Database: Current Status and Future Directions

**Philip W. Gassman, James Bass**

Center for Agricultural and Rural Development, Iowa State Univ., Ames, IA, USA

**Raghavan Srinivasan (Srini), Jaclyn Tech**

Spatial Sciences Laboratory, Texas A&M University, College Station, TX, USA

# Some Database History: Part 1

- **Origin can be traced to: 2007 Trans. ASABE review article**
  - Gassman et al. 2007 The Soil and Water Assessment Tool: Historical development, applications, and future research directions. Transactions of the ASABE. 50(4): 1211-1250. <https://doi.org/10.13031/2013.23637>
- **2007 Delft, Netherlands SWAT Conference**
  - Srimi suggests idea to Phil ... genesis of database
- **2009: Database becomes available on-line**
  - Has been hosted on CARD server so far ...
  - Initial total articles = 263; current total articles = 6,562

# Some Database History: Part 2

Primary Application Category	Hydrologic Only	Hydrologic & Pollutant	Pollutant Only
Calibration and/or sensitivity analysis	15	20	2
Climate change impacts	22	8	--
GIS interface descriptions	3	3	2
Hydrologic assessments	42	--	--
Delineation or input data effects	21	15	--
Comparisons with other models/methods	5	7	1
Interfaces with other models	13	15	6
Pollutant assessments	--	57	6

# Some Database History: Part 3

- **Similar database does not exist for any other model**
- **Majority of articles obtained via Google Scholar searches**
  - **Journals are screened for validity**
  - **Mostly English articles but some other languages**
- **2025: Texas A&M will take over hosting database**
  - **No longer feasible to host it at CARD**
  - **Dr. Phil retirement; Iowa State web page formatting issues**

# Literature Database Webmasters

**Curtis Balmer/past  
CARD (1977-2023)**



**James Bass/present  
CARD**

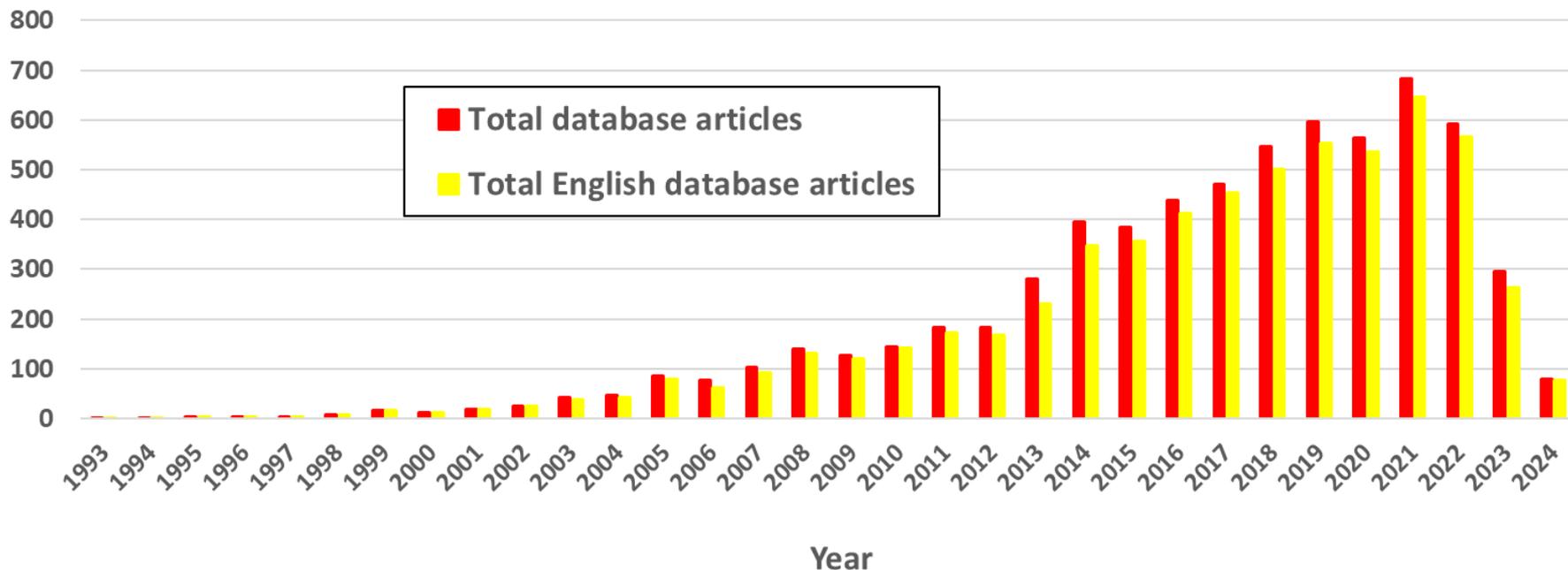


**Jaclyn Tech/future  
Texas A&M**



# Distribution of Articles in Database by Year

Total Articles



# Article Distribution by Language (non-English = ~7.2%)

Language	Total articles
English	6,090
Korean	108
Chinese	96
Portuguese	67
Persian	66
Indonesian	61
Spanish	17

Language	Total articles
Spanish & English	10
French	9
Thai	9
Turkish	9
Vietnamese	5
German	3
Japanese	2

Language	Total articles
Polish	2
Arabic	1
Basque	1
Czech	1
Romanian	1
Russian	1
Ukrainian	1

# How Many SWAT Articles Exist?: Part 1

- Current total articles: 6,562
- 2023 articles: 295; additional identified: 389
- 2024 articles: 80; additional articles: 244
- Upadhyay et al. 2022: PRISMA review approach
  - Preferred Reporting Items for Systematic Reviews and Meta-Analyses
  - **7,334 unique “peer-reviewed SWAT articles”** from: Scopus, Academic Search Complete, Environment Complete, **CAB Abstracts**, GeoRef, and Agricola databases
  - Not clear if all are English articles or from “legitimate journals”

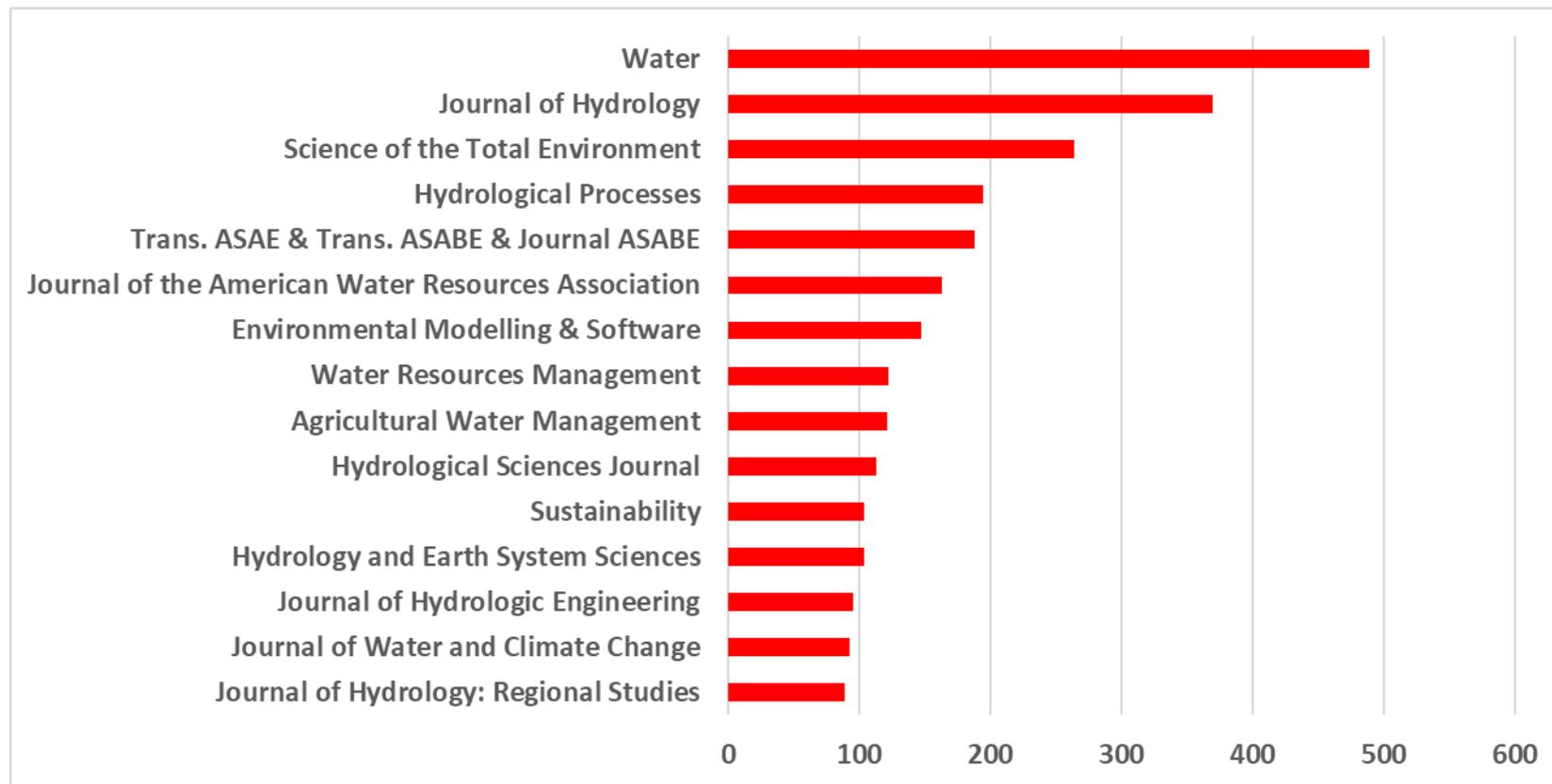
# How Many SWAT Articles Exist?: Part 2

- How many other non-English articles exist?
- Rong et al. 2020 abstract quote (article written in Chinese):
  - **A total of 428 articles with the theme of SWAT model published in academic journals between 2015 and 2017 were retrieved from the China National Knowledge Infrastructure ...**
- Clear revelation that hundreds, if not thousands, of additional non-English SWAT articles have been published
- One other note: DOI and URL links have been cleaned up for non-English articles (Chinese articles may still need some review)

# Database Screening Process

- First: determine if “journal is legitimate”
- Screening based on three Indexing Databases:
  - Directory of Open Access Journals (DOJ), Scopus, and/or Web-of-Science Core Collection
- Other articles published by “legitimate source” also included (universities, societies, etc.)
- ~5% of articles are rejected for database
- Currently a total of 963 journals in the database

# Top 15 Journals in the Literature Database with the Most Articles



# Article Distribution by Language (non-English = ~7.2%)

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Language	Total articles
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Basque	1
Czech	1
Romanian	1
Russian	1
Ukrainian	1

# Model Names Identified in Database

- Currently a total of 219 unique model names
- Vast majority of articles: SWAT or a modified SWAT
  - SWAT (modified) or unique name (e.g., ESWAT, SWAT-G)
- Subset of Pre-SWAT or SWAT-related models
  - ALMANAC (& variants), APEX, EPIC, GLEAMS, ROTO, SWRRB
- 46 studies identified as “none” (no model)
  - data/component development, watershed description, etc.
- Other model names not identified (way too many)
  - Exceptions: MODFLOW & Century

# Distribution of Articles by Model Category

<b>Model category</b>	<b>Total articles</b>
SWAT	5,602
Modified SWAT models with unique names	353
SWAT (modified)	256
SWAT+	139
Pre-SWAT or SWAT-related	85
SWAT-MODFLOW models	81
None	46

# Database Broad Categories

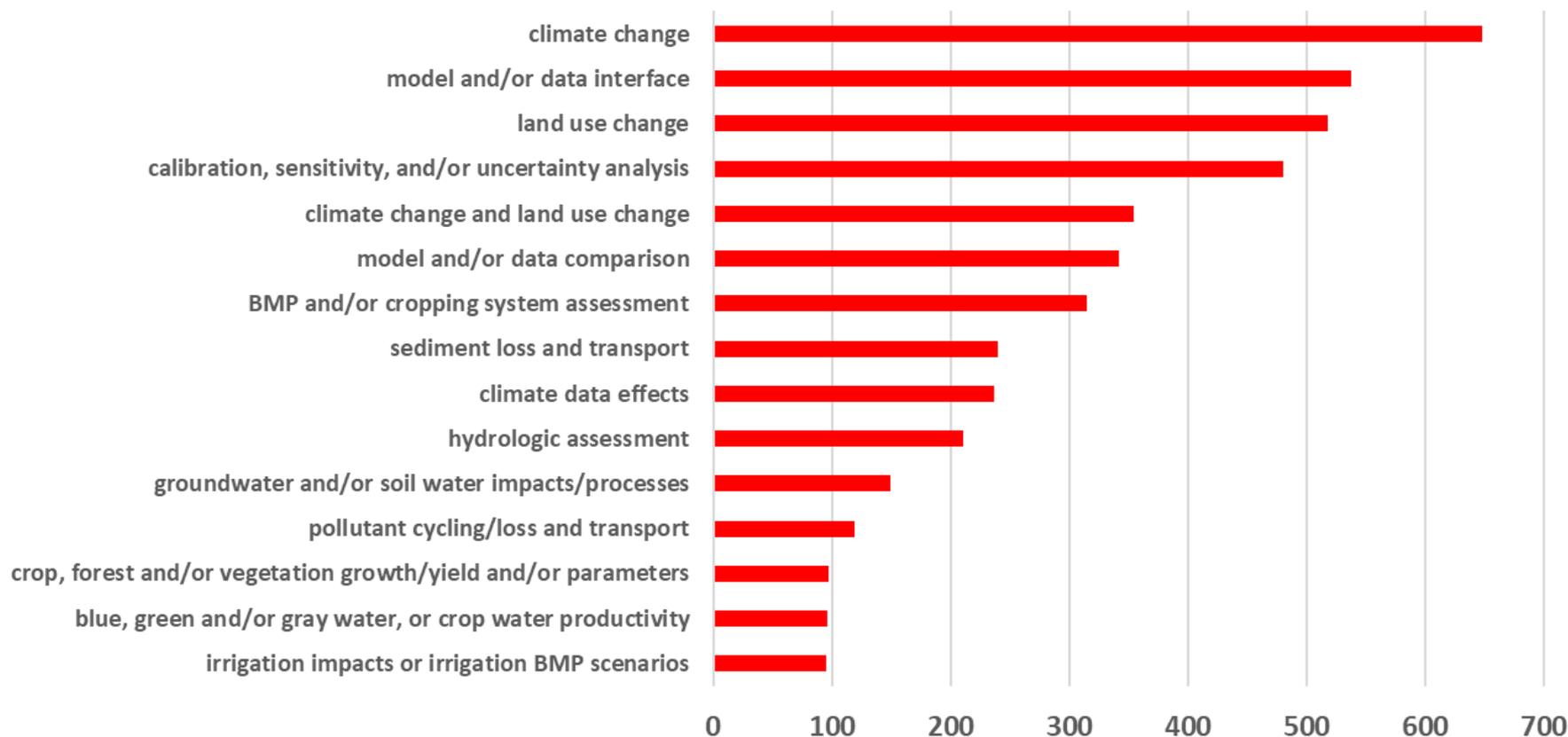
Category	Articles
hydrologic only	3,591
hydrologic and pollutant	1,971
pollutant only	429
review/history	237
Interface tool and/or other software	66
data or component development	56
crop/plant/tree growth or production	41
conceptual approach	38
literature citation analysis	26
computational approaches	23

Category	Articles
overview of special journal issue/section/etc.	21
pre-SWAT or SWAT-related	15
comment, correction, discussion, etc.	14
editorial, preface, introduction, etc.	14
BMP review or conceptual approach	10
watershed descriptions	4
documentation and/or terminology	2
soil carbon cycling	2
education and/or training	1
theoretical foundations	1

# Primary and Secondary Categories

- Subjective judgment used for categorizing articles
  - Some studies could be classified in 3 or more categories
  - Some studies only classified for primary category
    - Secondary category = “none” (197 studies)
- 96 different primary & secondary categories
  - Some categories may be removed or renamed
- Some recategorization initiated (needs to be finished)
  - Examples underway: point source assessment, water supply assessment

# Top 15 Primary Categories with the Most Articles



# Current Database on CARD Website

The screenshot shows a web browser displaying the SWAT Literature Database page. The URL in the address bar is [https://www.card.iastate.edu/swat\\_articles/](https://www.card.iastate.edu/swat_articles/). The page header includes the SWAT logo (Soil & Water Assessment Tool), the title "SWAT Literature Database for Peer-Reviewed Journal Articles", the CARD logo (Center for Agricultural and Rural Development), and the Iowa State University logo (OF SCIENCE AND TECHNOLOGY). A navigation bar contains links: Search Database, Add an Article, Readme, Contact Database Staff, Citations List, SWAT Special Issues & Sections, SWAT Models, and CARD.

Below the navigation bar, a message states: "Please see the updated [Readme](#) statement for further comments regarding the database."

The main content area features a "Narrow down the articles shown" section with several dropdown menus for filtering: Journals, Models, Broad Application Categories, Primary Application Categories, Secondary Application Categories, and Languages. Below these is a date range selector set to "Year: 1984" to "2025".

A search box is highlighted with a red circle. It contains the text: **(search on any word or phrase)**  
*Use an asterisk (\*) to replace any one character (e.g. -> diacritic characters)*  
*Enclose your search term in double-quotes to perform an exact word match.*

Below the search box are "Submit" and "Reset Selections" buttons.

At the bottom of the search section, it displays:  **6561 Articles Displayed**

The Windows taskbar at the bottom shows the system tray with weather (71°F Partly sunny), search, and various application icons. The date and time are 7/11/2024 at 2:33 AM.

New

s Bass

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Assistant Research Scientist

Email: [natalja.cerkasova@brc.tamus.edu](mailto:natalja.cerkasova@brc.tamus.edu)

**HYDROLOGIC AND WATER QUALITY  
MODELING**

**GRADUATE EDUCATION**

PhD Environmental Science, Klaipeda

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# Back to the Future: Maintaining the Database

- **Texas A&M will oversee citation data uploading, etc.**
  - Srini & Jaclyn already have some ideas ...
  - Dr. Phil hopes to stay involved
  - Perhaps AI could play a role in database maintenance
  - Process needs to be automated as much as possible
- **Opportunities for user community**
  - Individuals could focus on specific topics, languages, etc.
  - Uploading webpage has always been available
    - However, will likely require password in the future

# <https://www.card.iastate.edu/people/profile/?n=philip-w-gassman>

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## Philip W. Gassman · Research Scientist

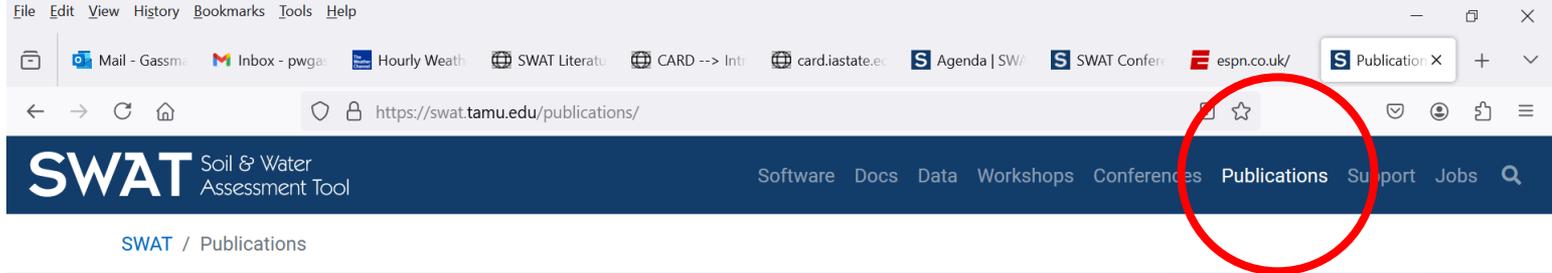


Philip W. Gassman  
Iowa State University  
560A Heady Hall  
518 Farm House Lane  
Ames, IA 50011-1054  
515-294-6313

[pwgassma@iastate.edu](mailto:pwgassma@iastate.edu)

Phil Gassman has been engaged in research at the Center for Agricultural and Rural Development, Iowa State University since 1987. He received his degrees from Iowa State University: BS and MS degrees in agricultural engineering in 1984 and 1986, and PhD in environmental science in 2008. His research efforts support the integration of environmental and economic models that assess policy scenario impacts for watersheds and other regions, and the testing of field- and watershed-scale models. Phil has worked on varied projects, such as analyses of the risks and benefits of herbicide use, soil erosion and soil nitrogen loss studies, atrazine leaching in the Midwest, and the impacts of alternative practices of livestock

# Access to Database on the SWAT Website

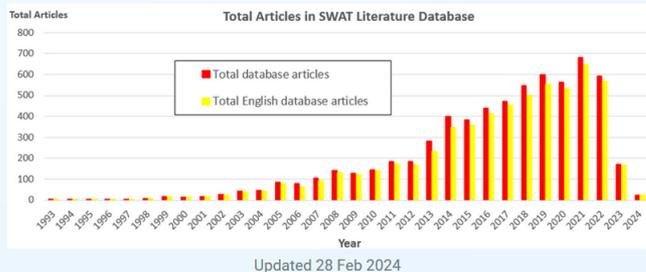


SWAT / Publications

## SWAT Literature Database

Visit the SWAT Literature Database for a comprehensive and searchable database of SWAT journal articles. The database is maintained by the Center for Agricultural and Rural Development (CARD), Iowa State University.

SWAT Literature Database



View [lead-off articles](#) for SWAT special issues, sections, and collections. See the [home page](#) or recent [conference pages](#) for any upcoming special issues call for papers.

We recommend using the [SWAT Literature Database](#) to find publications. If you cannot find what you're looking for, browse one of our selected publication lists below:

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70°F  
Mostly cloudy

Search



2:15 AM  
7/11/2024