

Graphics & Data in R
Week 2 – Tuesday
Applied Regression Analysis (STAT 757)

Paul J. Hurtado

Tuesday, 26 Jan, 2016

COLLOQUIUM

University of Nevada
Reno
College of Science

Thursday, January 28, 2016

2:30P.M.—3:30P.M., AB 635

“Extremes of Gaussian Processes”

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Abstract:

The analysis of properties of general Gaussian processes has been the subject of active studies in recent years. Among others, an important role is played by extremes and related functionals of analyzed processes. Motivation is delivered by a number of open theoretical problems as well as applied probability models in insurance, queueing theory, hydrodynamics or anomalous diffusions. Since only a few solutions of interesting problems are known in explicit form, then there is a great need to develop techniques that allow to find asymptotic behavior of supremum distributions. In this talk I present recently studied problems in the theory of asymptotic behavior of supremum distribution of Gaussian process and their connections with ruin probability for a risk processes, a steady-state buffer content for fluid queues, or exit problems for iterated processes. The talk is based on joint work with Krzysztof Debicki (University of Wrocław) and Michel Mandjes (University of Amsterdam).

Announcements

<http://www.pauljhurtado.com/teaching/SP16/>

Data & Graphics

Why has “applied statistics” become data science?

- ① There's more to statistics than the models! **Data** are key!
- ② Computers allow us to access data in various ways.
- ③ We can do more than compute statistics: **visualization**.

Data & Graphics

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- ④ In short, because **computers are redefining statistics**.

This highlights two skill sets you might want to acquire:

- ① **Proficiency accessing and manipulating data**, and
- ② **data visualization**.



Example

Museum #	Genus	Species	Subspecies	County	State	Country	Location	Elevation	Day	Month	Year	Collector	Action/Preparat	Preparation	Weight (g)
2154	Accipiter	cooperii													
72	Accipiter	gentilis		Sierra	CA	USA	Dog Valley	5000	2	Sep	1949	Ashall, R	1 (BKJ)	Hettich, Steve	M
690	Accipiter	gentilis		Washoe	NV	USA	Virginia Range, 2 mi E and 1 mi S of mi up from Slaughterhouse Creek		29	Mar	1954	Johnson, Ned K			M
2176	Accipiter	gentilis			NV	USA			17	Jan	1990	Smith, Bruce		Hills, Victoria	394.5
2182	Accipiter	gentilis												Hettich, Steve	
21	Accipiter	striatus		Washoe	NV	USA	Débo, 12 mi E of Sparks		18	Oct	1940	Trelease, Thomas J			173.75
25	Accipiter	striatus		Washoe	NV	USA	Débo, 12 mi E of Sparks		9	Nov	1940	Trelease, Thomas J			109.7
689	Accipiter	striatus		Lincoln	NV	USA	Hiko, Pahranagat Valley		10	Apr	1954	Johnson, Ned K			M
1462	Accipiter	striatus		Storey	NV	USA	Logamarsino Canyon		10	Apr	1966	Armbruster, J			130.7
1503	Accipiter	striatus			CA	USA	Grass Valley		24	Dec	1965	Jameson, Dave	5 (DS)	Salter, Dave	212.6
1938	Accipiter	striatus		Churchill	NV	USA	Fallon, Hamigan Road		20	Jan	1988	Curran, Jim		Yandell, Ulla	124.3
2025	Accipiter	striatus		Washoe	NV	USA	Foothill Rd., Reno		13	Mar	1989	Greenhough, Nancy		Hills, Victoria	66.2
2026	Accipiter	striatus												Hills, Victoria	112.1
2055	Accipiter	striatus				USA	Found in Mason Valley			Apr	1989			Hills, Victoria	154.5
2058	Accipiter	striatus												Hills, Victoria	153.3
2101	Accipiter	striatus												Hills, Victoria	80.7
2156	Accipiter	striatus		Washoe	NV	USA	Mayberry Bridge area, Reno		15	Nov	1989	Hemon, G		Hills, Victoria	88.2
2193	Accipiter	striatus												Hettich, Steve	
11	Actitis	macularia		Churchill	NV	USA	Fallon		16	Sep	1940	Trelease, Thomas J			F
645	Actitis	macularia		Washoe	NV	USA	Truckee River, 6 mi W of Reno	4800	28	Oct	1953	Johnson, Ned K	252 (BKJ)		M
923	Actitis	macularia		Douglas	NV	USA	Gardnerville	4900	26	Jun	1954	Johnson, Ned K			M
1065	Actitis	macularia		Washoe	NV	USA	Washoe Valley	5000	10	Aug	1954	Johnson, Ned K			M
1243	Actitis	macularia		Churchill	NV	USA	3 mi E NE of Fallon		28	May	1960	Alcom, JR		26262 (JRA)	M
562	Aechmophorus	occidentalis		Washoe	NV	USA	Pyramid Lake		29	Apr	1952	Waltenspiel, George	6 (GW)		F
1146	Aechmophorus	occidentalis		Washoe	NV	USA	Lake Shore Beach		11	Mar	1957	Negley, Jim		Alcom, Al A	M
1431	Aechmophorus	occidentalis		Churchill	NV	USA	Stillwater	4200	8	May	1965	Oxbornow, Tony	3 (TO)		310.4
1432	Aechmophorus	occidentalis		Churchill	NV	USA	Stillwater		8	May	1965	Cornwall, Roger	3 (RC)		848
1457	Aechmophorus	occidentalis		Lyon	NV	USA	Fremley Wildlife Area	4400	28	Apr	1966	Soulares, Robert	1 (RS)		517.3
1834	Aechmophorus	occidentalis		Carson City	NV	USA	Carson City		16	May	1977	Ryser, Fried	313 (FR)		594
2041	Aechmophorus	occidentalis			NV	USA	WAF, 2920 Eagle St., Carson City		29	Sep	1986	Laird, Nancy		Hills, Victoria	570.0
2131	Aechmophorus	occidentalis			NV	USA	Pyramid Lake at Pelican Point		26	Aug	1989	Judd, Hugh			1191.0
2257	Aechmophorus	occidentalis		Washoe	NV	USA	S Shore of Pyramid Lake		27	Apr	1991	Scott		Hills, Victoria	548.9
1410	Agelolus	acidicus		Carson City	NV	USA	Carson City, Carson Range	7300	28	Aug	1964	Pete	236 (FR)		96.5
1506	Agelolus	acidicus		Washoe	NV	USA	Little Valley, Carson Range	6500	21	Jun	1965	Evans, Ray	245 (FR)	Ryser, Fried	75
1815	Agelolus	acidicus		Washoe	NV	USA	Geiger Grade, Highway 17		9	Feb	1977	Oakleaf, Bob	306 (FR)	Ryser, Fried	52.5
1955	Agelolus	acidicus		Washoe	NV	USA	395 at Andrew Lane, Reno		2	Jan	1988	Laird, RW		Pierce, Becky	88.6
2007	Agelolus	acidicus		Carson City	NV	USA	89704		11	Feb	1988			Davis, M	73.3
2037	Agelolus	acidicus			NV	USA	D. O. A., Klach Animal Hospital, (?)		10	Nov	1987	Laird, Nancy		Hills, Victoria	74.7
2077	Agelolus	acidicus			NV	USA	WAF, 2920 Eagle St., Carson City		23	Sep	1988	Laird, Nancy		Hills, Victoria	65.5
2089	Agelolus	acidicus			NV	USA	Hwy. 395, 1 mi E of Cold Springs		20	Feb	1989			Hills, Victoria	76.7
2159	Agelolus	acidicus			USA	USA	I-80, 5 min. from E of Hirschdale		1	Jan	1990	Hull, Ken		Hills, Victoria	
2200	Agelolus	acidicus												Hettich, Steve	
2253	Agelolus	acidicus		Washoe	NV	USA	Reno			Feb	1991			Hills, Victoria	114.8
1523	Aeronautes	saxatilis		Barbara	CA	USA	Hurricane Deck		18	May	1943	Show, S B			F
1524	Aeronautes	saxatilis		Barbara	CA	USA	Hurricane Deck		18	May	1943	Show, S B			F
1574	Aeronautes	saxatilis		Lyon	NV	USA	Road near Chaves Ranch		19	Apr	1956	Heflan, Pete		Mathis, Judy L	43.2

UNR birds



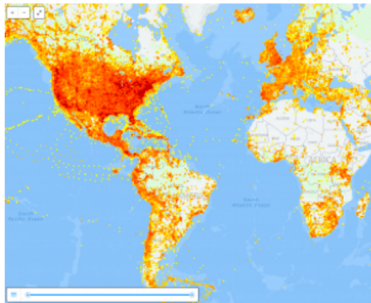
Example

<http://ebird.org/content/ebird/news/gbif/>

A half a billion biodiversity records

22 August 2014

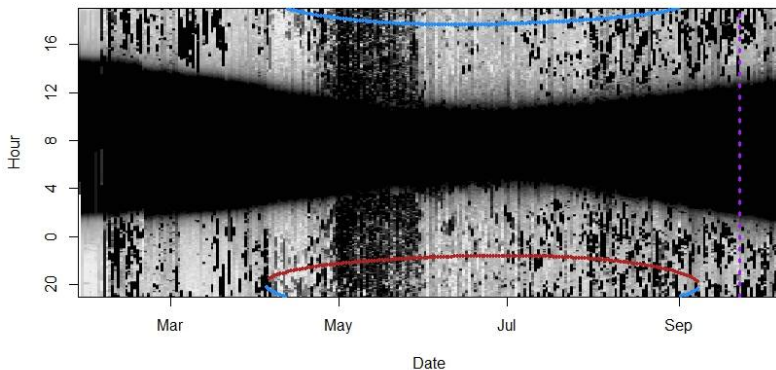
Recently, eBird updated the data we share and publish through the Global Biodiversity Facility ([GBIF](#)), an international infrastructure that provides open access to biodiversity data. One result of this refresh is that data accessible through GBIF's network now exceeds 500 million records—a true milestone for access to biodiversity information. This short article explains how data are made available and includes an interactive map showing where observations come from.



With the assistance of our collaborators at [DataONE](#) and [VertNET](#), we have now developed the pipeline for providing continued open access to eBird data to a broad and diverse constituency.

Example

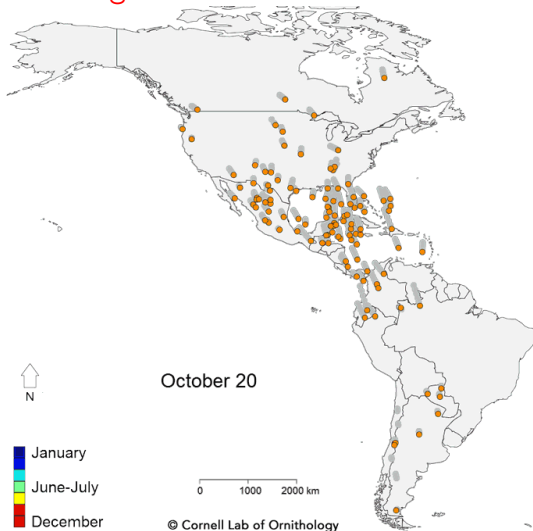
Geolocator light data from a Canvasback near Reno, NV.



Courtesy of Chris Nikolai

Example

<http://ebird.org/content/ebird/news/lasortemap/>



Textbook Data

Head over to the textbook author's website, and download the data and R scripts. Save these to a `data/` directory and `rscripts/` directory, respectively.

<http://www.stat.tamu.edu/~sheather/book/>

Copy the Chapter 1 R code and data into a different directory.