How to make a Poster

By Dr Maha Al-Sulaimani

Presentation Objectives

- To get to know what a poster is.
- How to make a poster using Powerpoint.
- Critique some posters.

What is a Poster?

- A Poster is a visual presentation of your research.
- Concise and focused (not a long presentation of your life's work!)
- Explains your research using schematics, graphs, and other visual strategies, with a minimum of supporting text.
- Uses various strategies to attract viewers and stimulate conversation.

Variation Tolerant Asynchronous FPGA

Hudson Lowe
Microelectronic System Design Group, Newcastle University, UK

Monterey, California
27 February to 1 March, 2011

1. Introduction

•With the shrinking size of CMOS transistors and higher VLSI chips density, variations have become a key factor affecting system behaviors.

•In modern FPGAs, interconnects occupy up to 80% of the whole chip area. Long interconnects can easily dominate delay if not managed properly.

•It is getting more challenging to distribute global clock signal across wide areas evenly in the latest FPGA technology.

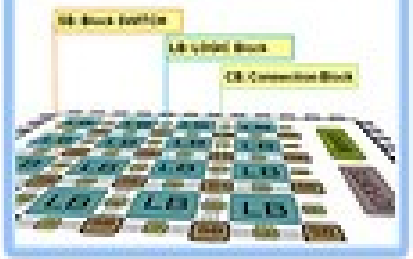
2. Method

•**Interconnect Delay Insensitive** (DI) FPGA architecture with distributed asynchronous control.

•Asynchronous Technique without global clocks.

•Maintaining the basic block structure of traditional FPGAs allows re-use of existing CAD tools.

3. Island Style Architecture



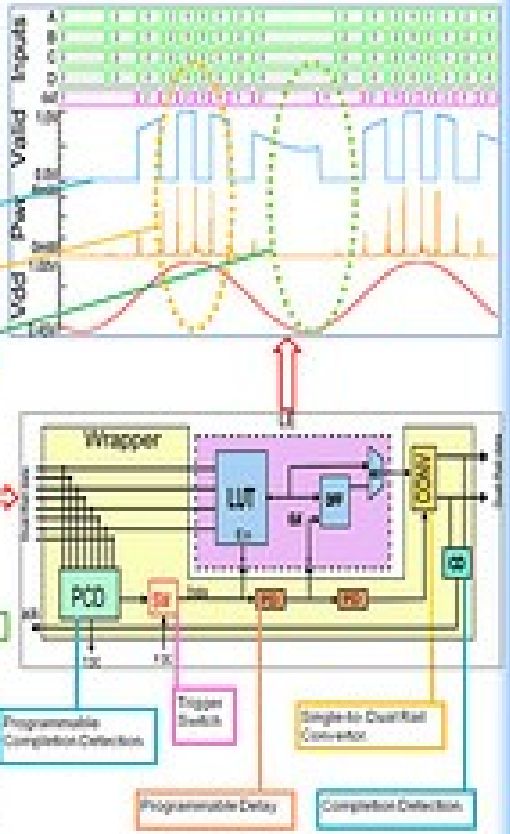
4. Experiment & Result

Adder Implementation
- Investigation of PLE behaviour under constantly varying Vdd
- Sinusoidal Vdd = 1.0V ~ 0.45V
•PLE works in a self-looping environment with the completion of one round providing the ready signal to trigger the next round.

•Valid signal from the output CD block indicating output lines have valid data.

•Faster with higher power consumption when Vdd is increased.

•The circuit is slower with lower power consumption when Vdd is reduced.



5. Latency & Energy

•Overall latency and energy per operation performance.

•Significant energy savings by lowering Vdd to 0.6V (latency only increases by 2x).

• Stops working below 0.45V, building PD delays become faster than the units (LUT etc.)

6. Conclusions

•By introducing delay-insensitivity into the inter-block long data links, it applies the advantages inherent to asychrony for these interconnects, namely variation tolerance and latency robustness.

•Allows efficient computation and correct operation across a wide Vdd range.

•Maintaining similarities to current synchronous structure allows the use of existing FPGA logic mapping tools.

7. Future work

•Carry out comprehensive comparative studies between systems constructed in our architecture and in other types of asynchronous FPGA architectures.

•Further develop and complete the design and synthesis flow, including a fully automatic synthesis method.

Acknowledgements

This work is supported by EPSRC grant number (EP/G000573/1). Special thanks for Dr Stephen Bell from Rutherford Appleton Laboratory for his support in using different Cadence design flows and simulation techniques.

PGC 2011
School of Electrical, Electronic and Computer Engineering

For further information
Please contact
More information on this and related projects can be obtained at
http://async.org.uk/hl.html

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A drop in the ocean?

How many marine species remain undiscovered?

Most species are not known to science [1,2]. This has important consequences for conservation. Recently discovered species have been overwhelmingly identified in biodiversity hotspots [3], places with areas of extensive habitat loss. As-yet-unknown species are likely to be similarly situated – and similarly threatened with extinction [4]. Determining how many of these species there are is therefore a crucial step in setting international conservation priorities [4].

Approach

Recent efforts at estimating the numbers of species remaining have focussed on extrapolating existing data over time, in the belief that the numbers of new species per time period will diminish as the group of unknown species shrinks [5,6]. However, these approaches have overlooked the importance of the taxonomists who describe species. As their numbers have increased over the last 250 years, so to have the numbers of species described [4].

A shoal of Indo-Pacific sailfish harvesting bait fish off the coast of Mexico

Taxonomic effort

In fisheries ecology, raw fish catches are scaled by the effort taken to obtain them, producing 'catch per unit effort'. Here, using methods developed for terrestrial ecology [4], we model the rate at which taxonomists 'catch' previously unknown species, to estimate how many marine species remain undiscovered.

What's in a name?

To predict the total number of species in a taxon, we need to first determine how many valid species have already been described. This is surprisingly arduous, as different taxonomists inadvertently give different names to the same species, causing considerable uncertainty.

Data sources

To overcome these problems of synonymy, this study will aggregate data from multiple sources, including OBIS and WoRMS, FishBase and Algaebase, as well as an original dataset developed by Roberts et al [8]. From these sources, representative genera where synonym problems have been largely resolved will be selected and modelled.

Decoding The Model

$$S_i = (a + b Y_i) * (T_i) * (S_T - \Sigma S_i)$$

- S_i: Number of species described per unit time
- Y_i: The time interval
- T_i: Number of taxonomists involved in the description
- S_T: No. of species described to that time
- a, b: Constants to be estimated. S_i is the predicted total number of species

Acknowledgements: The author thanks Lucas Joppa and Stuart Pimm for sharing methods and models

Further information and PDF copy of this poster sr588@york.ac.uk | http://bit.ly/fASKY

Future Directions

The purpose of this study is to estimate how many marine species are presently unknown to science. However, when setting international conservation priorities, we need to understand not just how many missing species there are, but also where they are likely to be found.

By using range data collected for this study, we will additionally model where these missing species may reside. Our results may suggest new conservation priorities in new areas. We may even discover that some of our hotspots are in the wrong place.

Expected Results

In line with the results from the terrestrial applications of this model for flowering plants and amphibians [4,9], we would expect to see a marked increase the numbers of species described over time and a concurrent increase in numbers of taxonomists.

This would fatally undermine any modelling of total species numbers that assumes the rate will slow. Instead, the number of species per taxonomist would increase rapidly initially, before declining as the pool of unknown species begins to dry up.

The models would likely predict that comparatively few marine organisms living in shallow waters close to areas of human habitation remain unknown, whereas significant proportions of their deeper-dwelling or remoter counterparts have yet to be discovered.

1. May, R.M. How Many Species Are There on Earth? Science 241, 1441 -1449 (1988).
2. Wilson, E.O. The Diversity of Life. (Penguin, 2001).
3. Myers et al. Biodiversity hotspots for conservation priorities. Nature 403, 853–858 (2000).
4. Joppa, L.N., Roberts, D.L. & Pimm, S.L. How many species of flowering plants are there? Proceedings of the Royal Society B: Biological Sciences (2010).
5. Solow, A.R. & Smith, W.K. On estimating the number of species from the discovery record. Proc. Biol. Sci. 272, 285–287 (2005).
6. Wilson, S.P. & Costello, M.J. Predicting Future Discoveries of European Marine Species by Using a Non-Homogeneous Renewal Process. Appl. Statist. 54, 897–918 (2005).
7. Appeltans, W. et al. World Register of Marine Species. at <http://www.marinespecies.org>
8. Roberts, C.M. et al. Marine Biodiversity Hotspots and Conservation Priorities for Tropical Reefs. Science 295, 1280 -1284 (2002).
9. Pimm, S.L. et al.How Many Endangered Species Remain to Be Discovered in Brazil? Natureza & Conservação 8, 71–77 (2010).

Why is a poster better than a talk?

- Can be read in under 10 minutes.
- More personal interaction with people.
- Posters are also handy because they can be viewed even in your absence.
- An alternative, if not good at public speaking.

- Know your Audience.
- Familiarize yourself with the venue.
- Format of poster.
- Distance to be read from (usually 4-6 feet).

Best Software for designing large-format Posters

- QuarkXPress
- InDesign
- LaTeX
- Scribus.

- Graphic packages like Illustrator, Freehand and Inkscape.
- Poster Genius: specific for scientific posters.
- Microsoft Powerpoint.

How to use Powerpoint to make poster

- Open Powerpoint, click on “File, New”.
- Choose a “blank” slide presentation.
- Click on design and select page set up: popular size is 48-60 inches wide and 36 inches high.
- To add title, insert a text box, font 72 pt or higher.

- To add text, insert text box, font 24 pt or higher.
- Use double spacing.
- Copy text from Microsoft Word, highlight selection, in Powerpoint click on Paste Special and select Formatted Text.
- To add borders around text, right click inside text box or shape to select format shape.

- Click and drag on sizing handles at top, bottom and sides to resize.

- To keep graphics such as institutional logos proportional, press Shift key, click on the side handle, and drag to resize.

- Print poster on letter sized sheet of paper and choose “scale to fit”.

Title that hints at the underlying issue or question

Your name(s) here
Your address(es) here

All columns should have *exactly* the same width and be separated from each other by *exactly* the same amount of white space.

Format in "sentence case." This means only the "t" in "title" gets capitalized.

Introduction

This template has column widths and font sizes optimized for printing a 36 x 56" poster—just replace the "tips" and "blah, blah, blah" repeat motifs with actual content, if you have it. Try to keep your total word count under 500 (really). More tips can be found at "Designing conference posters" at

http://colinpurrington.com/tips/academic/posterdesign

To see examples of how others have abused this template to fit their presentation needs, perform a Google search for "colin purrington poster template."

Your main text is easier to read if you use a "serif" font such as Palatino or Times (i.e., people have done experiments and found this to be the case). Use a non-serif font for your title and section headings.

Figure 1. Photograph or drawing of organism, chemical structure, or whatever…that might help lure people to your poster. Yes, I risked my life getting this photograph.

Materials and methods

Be brief, and opt for photographs or drawings whenever possible to illustrate organism, protocol, or experimental design. Viewers don't want to read about the gruesome details, however fascinating you might find them.

Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah, blah. Blah, blah, blah. Blah, blah, blah.

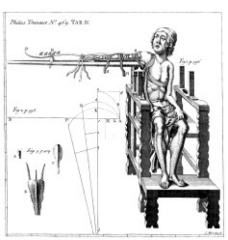


Figure 2. Illustration of important piece of equipment, or perhaps a flow chart summarizing experimental design. Scanned, hand-drawn illustrations are usually preferable to computer-generated ones. Just bribe or flirt with an artist to get them to help you out.

Results

The layout for this section should be modified from this template to best show off your graphs and other result-related illustrations. You might want a single, large column to accommodate a big map. Or perhaps you could arrange 6 figures in a circle in the center of the poster. Do whatever it takes to make your results *graphically* clear. And, for the love of God (or whoever), make your graphs big enough to read from 6' away.

Paragraph format is fine, but sometimes a simple list of "bullet" points can communicate results more effectively:

- 9 out of 12 brainectomized rats survived **(fig. 3a)**
- Brainectomized rats ate less **(fig. 3b)**
- Control rats completed maze faster, on average, than rats without brains **(fig. 3c)** (t = 9.84, df = 21, p = 0.032)

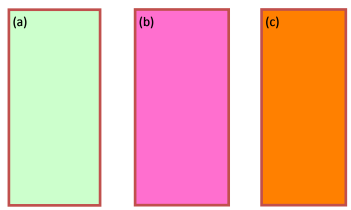


Figure 3. Make sure legends have enough detail to explain to the viewer what the results are, but don't go on and on. Don't be tempted to reduce font size in figure legends, axes labels, etc.—your viewers are probably *most* interested in reading your figures and legends!

Often you will have some more text-based results between your figures. This text should *explicitly* guide the reader through the figures.

Blah, blah, blah (**Figs. 3a,b**). Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah.

Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah (**Fig. 3c**). Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah (data not shown).

Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah, blah, blah (God, personal communication).

Putting titles on graphs makes your graph instantly understandable to your viewers. E.g., just TELL your viewer what's so cool or important about the graph…don't make them hunt for it.

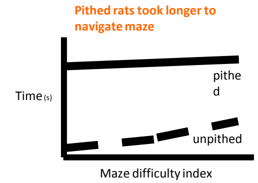


Figure 4. Label the lines manually (as above) and then delete the silly key provided by your charting software. The above figure would also be greatly improved if I had the ability to draw mini rats with and without brains.

Be sure to separate figures from other figures by generous use of white space. When figures are too cramped, viewers get confused about which figures to read first and which legend goes with which figure. Cramped content just looks bad, too.

Figures are preferred but tables are sometimes unavoidable. A table looks best when it is first composed within Microsoft Word, then "Inserted" as an "Object." If you can add small drawings or icons to your tables, do so!

Table 1. ANCOVA examining the effects of water treatment, parasite treatment, and initial height of nettle on nettle dry weight.

Source	df	Mean square	*F*-value	*p*-value
Water treatment	2	23.305	215.96	0.0001
Parasite treatment	1	0.049	0.455	0.5011
Nettle initial height	1	0.769	7.129	0.0084
Parasite treatment * nettle initial height	1	0.489	4.532	0.0348
Residual	163	0.108		

Put a figure here that explores one particular outcome in a complicated (and boring) table of results.

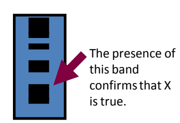


Figure 5. You can use connector lines and arrows to visually guide viewers through your results. Adding emphasis this way is much better than making the point with words in the text section. Especially useful for when you cannot be at poster to guide viewer.

Conclusions

You can, of course, start your conclusions in column #3 if your results section is "data light."

Conclusions should not be mere reminders of your results. Instead, you want to guide the reader through what you have *concluded* from the results. What is the *broader* significance? Why should anyone *care*? This section should refer back, explicitly, to the "burning issue" mentioned in the introduction. If you didn't mention a burning issue in the introduction, go back and fix that -- your poster should have made a good case for *why* you did what you did. A good conclusion will also refer to the literature on the topic -- how does your research add to what is *already* published on the topic?

Blah, blah, blah. Blah, blah, blah. Blah, blah, blah. Blah.

Adhere to citation guidelines in your field *exactly*. People will find your mistakes. Trust me.

Remember: **no period** after journal name (unless you use abbreviation).

Literature cited

Bender, D.J., E.M Bayne, and R.M. Brigham. 1996. Lunar condition influences coyote (*Canis latrans*) howling. *American Midland Naturalist* 136:413-417.

Brooks, L.D. 1988. The evolution of recombination rates. Pages 87-105 in *The Evolution of Sex*, edited by R.E. Michod and B.R. Levin. Sinauer, Sunderland, MA.

Scott, E.C. 2005. *Evolution vs. Creationism: an Introduction*. University of California Press, Berkeley.

Society for the Study of Evolution. 2005. Statement on teaching evolution. < http://www.evolutionsociety.org/statements.html>. Accessed 2005 Aug 9.

Acknowledgments

We thank I. Güor for laboratory assistance, Mary Juana for seeds, Herb Isside for greenhouse care, and M.I. Menter for questionable statistical advice. Funding for this project was provided by the Department of Thinkology, a Merck summer stipend, and the person who claims she's my mom. [Note that people's titles are omitted. Titles are TMI.]

For further information

Please contact *email@blahcollege.edu*. More information on this and related projects can be obtained at *www.yoursite.edu…* (give the URL for laboratory web site). A link to an online, PDF-version of the poster is nice, too.

Poster Backgrounds and Colors

- Backgrounds should preferably be darker (uses up more ink).
- Avoid fill patterns.
- Use light backgrounds with dark photos and vice versa.
- Neutral/gray backgrounds enhance color photos while white backgrounds reduce their impact.

Poster Contents

1. **Title (max 1 or 2 sentences):** is a one sentence overview of the poster.

- Should hint at the underlying issue or question (be catchy). Followed by your name and email address(es).

- Preferably written using a “non-Serif“ font (also for headings).

2. Introduction (max 200 words): First illustration or figure to lure people`s attention and interest.

- All columns should have the same width and be separated by the same space.
- Use a “serif” font for main text like Times New Roman, Arial or Palatino.
- Less text and more illustrations.
- References should be in the format of your filed.

3. Materials and Methods (max 200 words):

Be brief and opt for figures or drawings, like an illustration of the most important piece of equipment or a chart summarizing the experimental design.

4. Results (200 words without legends):

Make results CLEAR. Bullet points can be useful, a big map in a single large column, or 6 figures as a circle in the middle of the poster.

- Figure titles and legends should have enough detail 9sample size), without reducing font size.

- Focus on what is “cool” about your graph, figure or table.

- Text can be used to guide viewer.

- Figures should be far enough apart.

- Figures are preferred to tables, but if unavoidable, should be done in Microsoft Word and then inserted as an object.

- Small drawings or icons can be added to emphasize points in table.

- Connector lines and arrows can be used to guide viewers through results (useful when you are not around!).

5. Conclusions (max 200 words):

Conclusions should discuss and answer question mentioned in introduction (answer why you did what you did).

- Refer to literature on topic and what you have added.

6. Literature cited (max of 10 citations):

Adhere to guidelines in your field.

- No period after journal name only if abbreviated.

7. Aknowledgements (max 40 words): Thank specific contributions to project, funding, earlier versions of poster, conflict of interest.

8. Further Information (optional, max 20 words):

- Link to online PDF version of poster.
- Link to URL of laboratory site.
- ***Poster can also contain a section on aims and objectives.***

Tips:

- Be consistent in font type and size.

- Use bold, *italics,* or <u>underline</u> to emphasize words.

  - Don't change fonts to emphasize a word.
  - Don't use all three. Overkill!

- Check your spelling.
- General rule of thumb: 20% text, 40% graphics, and 40% empty space.
- Don’t use CAPS for a complete sentence.
- Do no have a section that contains more than 10 sentences.

No acute effects of an attentional training on attentional bias for happy, disgusted, or sad faces in dysphoric students.

Kruijt, A.W., Putman, P., & van der Does, A.J.W.

Leiden University - Institute of Psychology

Background

Biased processing of emotional information may play a causal role in depression and therefore modification of such biases could have therapeutic effects.[1]

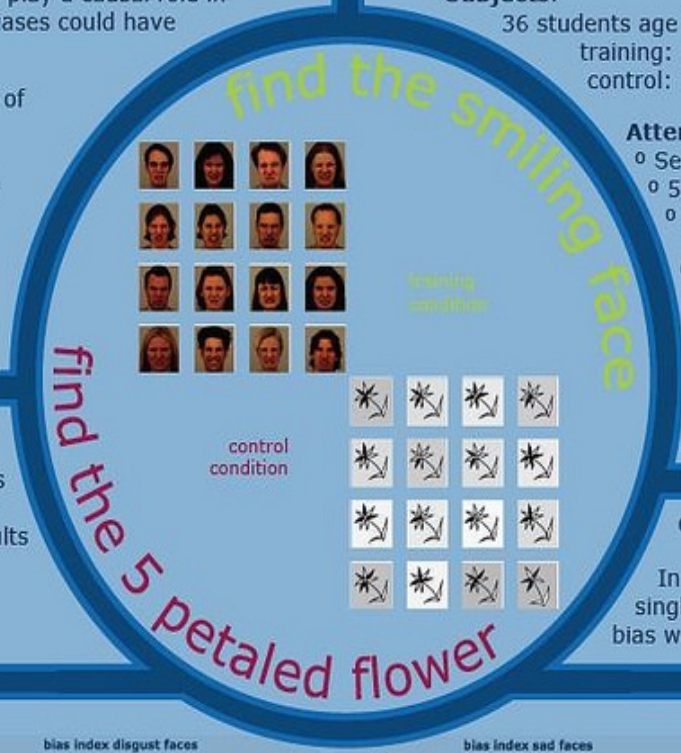
In people with low self-esteem, a single session of attentional training has been shown to reduce Emotional Stroop interference from negative social-evaluative words. The training group also showed less attentional bias for frowning facial expressions and better emotion regulation.[2,3,4]

We tested the hypothesis that attentional training modifies attentional bias for facial expressions in dysphoric individuals.

Analysis

Separate 2x2 (time x group) repeated measures ANOVAs on the dot probe bias index for each of the three expressions yielded no significant results (all $p > .05$)

Entering BDI, STAI-T, or LEIDS-R scores as covariates did not change this outcome.



Methods

Subjects:

36 students age 18-24

training:	n = 20	BDI M = 15.7 (sd 6.9)
control:	n = 16	BDI M = 14.4 (sd 6.8)

Attentional training:

- See figure
- 500 ms inter trial interval
- 256 trials (16 identities x 16 locations)

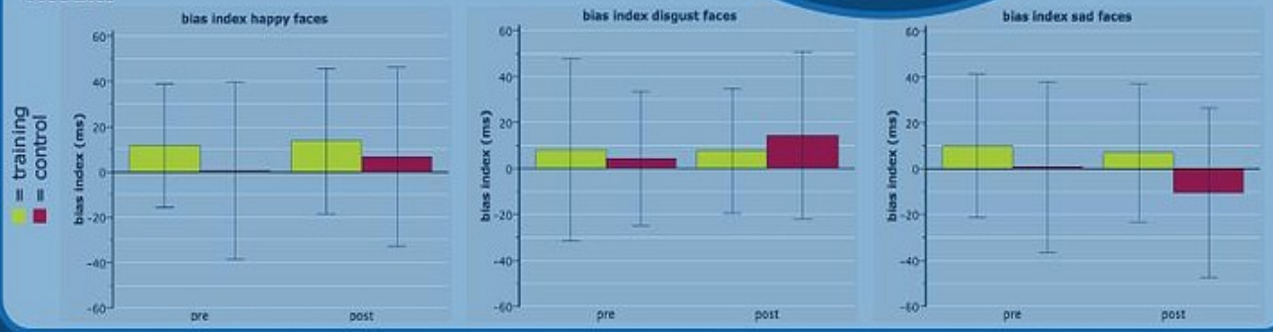
Outcome measures:

- **Dot probe bias index**
  - 320 trials
  - stimuli: happy, sad, disgust, & neutral faces
  - stimuli duration: 750 ms
- Negative Affective Priming
- Positive and Negative Affect Scale (state)

Conclusion

In our dysphoric student sample no effects of a single session of attentional training on attentional bias were found

Results



References

1: Wells, T.T. et al., (2009). *Cognition Emotion, 24(4).*

2: Dandeneau, S.D. et al., (2004). *J Soc Clin Psychol, 23(4).*

3: Dandeneau, S.D. et al., (2007). *J Pers Soc Psychol, 93(4).*

4: Dandeneau, S.D. et al., (2009). *Contemp Educ Psychol, 34(1).*

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Leiden University - the Netherlands

Impacts of sea-level rise on Seattle, WA

DANIEL MAHR • BROWN UNIVERSITY • GEO132 • DECEMBER 12, 2009

Introduction

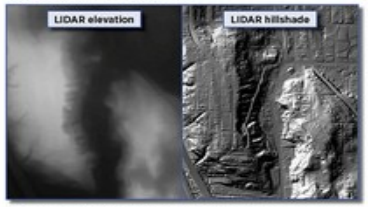
Among the many impacts of global warming, only sea-level rise physically displaces people and their communities. Understanding the impacts of rising oceans is especially important since so many densely populated urban areas exist in coastal regions. I hope to gain a better understanding of these impacts through the use of a geographic information system.

Research questions

- How much land will different amounts of sea-level rise displace in an urban area?
- How does this coverage disproportionately affect different building zones (e.g. residential, commercial, industrial)?

Data

Elevation: LIDAR (Light Detection and Ranging) data are the most accurate remotely sensed digital elevation models available with horizontal and vertical resolutions an order of magnitude better than the alternative (radar elevation data). The trade-off is coverage: LIDAR data are collected from airplanes and are expensive to obtain. Thus, such high-resolution data are only available (for free) in a few areas.



Due to the paucity of LIDAR data, I chose my King County study area as a result of the extensive and freely available LIDAR data set from the Puget Sound LIDAR Consortium. The digital elevation model used has a horizontal resolution of 14 feet and a vertical resolution of 1 foot.

Geocoding: For the correlation of inundation areas with building zones, I used parcel data from the King County Department of Assessments.

Methods

Sea-level rise heights:

- Since elevation data represent sea-level at mid-tide, the mean high tide height must be added to determine the inundation extent at high tide. NOAA's VDatum tool was used to calculate this value of 8.9984 feet.

Inundation mapping:

- Elevation data were merged into a single digital elevation model mosaic.
- Using the Single Output Map Algebra tool, rasters were created from the DEM representing the inundation coverage at five heights: 3, 6, 9, 12, and 15 feet (each plus the mean high tide height of 8.9984 feet).
- Using Raster Calculator, an aggregated raster was created representing the number of individual inundation rasters covering a given cell. Thus, cells with a value of 5 would be flooded by 3 feet of rise; cells with a value of 4 would be flooded by 6 feet of rise and so on.

Zoning correlation:

- Commercial and residential parcel data were processed and geocoded. 71% of commercial parcels and 98% of residential parcels matched.
- Using Extract Values to Points tool, values (0-5) from the aggregated inundation raster were appended to geocoded parcel points.
- Using Summarize function, tables enumerating the number of each type of parcel in each inundation zone were generated.

Results

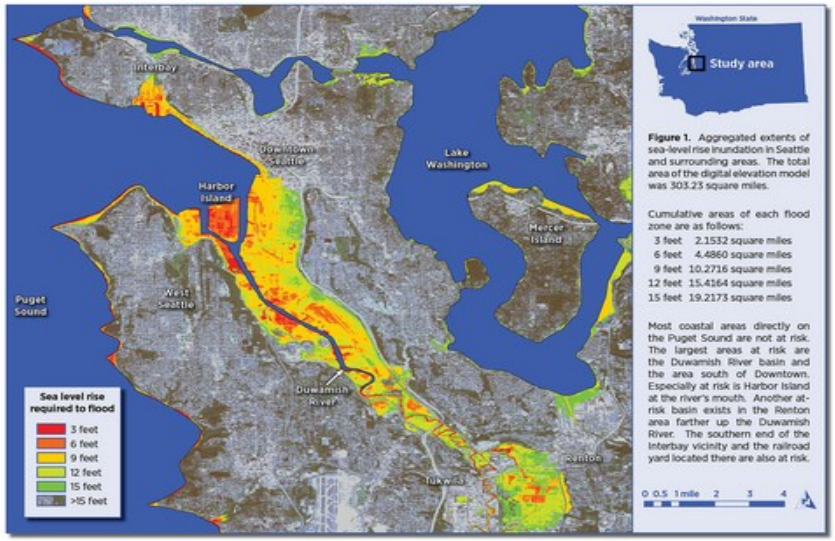


Figure 1. Aggregated extents of sea-level rise inundation in Seattle and surrounding areas. The total area of the digital elevation model was 303.23 square miles.

Cumulative areas of each flood zone are as follows:

3 feet	2.1532 square miles
6 feet	4.4860 square miles
9 feet	10.2716 square miles
12 feet	15.4164 square miles
15 feet	19.2173 square miles

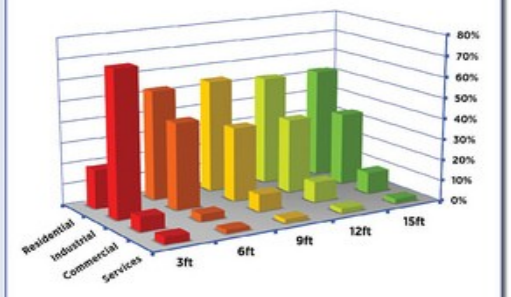
Most coastal areas directly on the Puget Sound are not at risk. The largest areas at risk are the Duwamish River basin and the area south of Downtown. Especially at risk is Harbor Island at the river's mouth. Another at-risk basin exists in the Renton area farther up the Duwamish River. The southern end of the Interbay vicinity and the railroad yard located there are also at risk.

Figure 2. Sea-level rise inundation impact by parcel zone. Each bar represents the percentage of parcels of that zone type out of the total number of parcels inundated for that depth. For example, 71% of parcels inundated by 3 feet of sea-level rise are zoned as industrial. The numerical data from which this plot was derived are tabulated below.

The unit used for this assessment is the number of parcels. Residential zones, which are generally made up of a greater number of smaller parcels, are therefore likely to outnumber other zones. Although a similar analysis using appraised value or square footage as the dependent variable could yield more meaningful results, they are not as practical. In the case of square footage, not all the floors in a given structure would necessarily be inundated by sea-level rise. In the case of appraised value, the replacement value of a given parcel may vastly exceed its taxable value. The low appraised value of vacant lots further complicates this approach.

Parcels categorized as "Services" include government buildings, fire stations, police stations, hospitals, houses of worship, schools, public parking lots, cinemas, and theaters.

	Services	Commercial	Industrial	Residential	Total
3 feet	3 (4%)	6 (7%)	60 (71%)	16 (19%)	85
6 feet	7 (2%)	15 (4%)	175 (42%)	221 (53%)	418
9 feet	35 (2%)	153 (8%)	658 (36%)	1002 (54%)	1848
12 feet	67 (2%)	298 (10%)	1088 (36%)	1593 (52%)	3046
15 feet	84 (2%)	375 (10%)	1280 (35%)	1935 (53%)	3674



Discussion

Sea-level rise extents

Land directly on the coast of Puget Sound are not greatly impacted by sea-level rise. The extent of inundation in these areas rarely exceeds a tenth of a mile from the current shoreline. It is probable that the glacially sculpted terrain in these areas has naturally steep-sloped shorelines and shallow beachfronts where even fifteen feet of sea-level rise does not drastically penetrate into the mainland.

The most vulnerable land lies along the Duwamish River. Unlike the steeply-sloped shoreline directly on Puget Sound, the Duwamish River forms a shallow basin where large swaths of land lie only a few feet above the height of the river. The tipping point where the marginal unit of sea-level rise floods the most area is between six and nine feet. This increment floods the area south of downtown Seattle, including the stadiums for the Mariners and Seahawks, as well as Boeing Field, a two-runway commercial airport. As the river's height above sea-level increases moving south towards Tukwila, the area at risk shrinks. Interestingly, a secondary at-risk basin exists in Renton, where sea-level rise of 12 feet or more would flood a large area of land.

Comparison of inundation to zoning

At three feet of sea-level rise, industrial parcels are the most vulnerable. Much of this can be attributed to Harbor Island, a man-made island at the river's mouth, where many container shipyards, petroleum tanks, and storage warehouses exist right at the shoreline.

At six or more feet of sea-level rise, the percentage of inundated parcels zoned as residential outnumbers all other zones. It should be noted, however, that this is probably due residential parcels being smaller, on average, than other types.

At nine feet of sea-level rise, the percentage of inundated parcels zoned as commercial spikes. This is due to much of the commercial district south of downtown Seattle flooding at nine feet.

There is not a consistent distribution of inundated zones until after six feet of sea-level rise. This has implications for policymakers and how they interpret the appropriate governmental response to different sea-level rise predictions.

Conclusions

Sea-level rise of any height will impact the Seattle area. At heights less than three feet, industrial areas will bear the brunt the inundation. At heights greater than three feet, the impact is more evenly distributed between industrial, commercial and residential parcels.

This discontinuous distribution exemplifies how different sea-level rise predictions can affect the response of policymakers and the government. More mild predictions would suggest an industry-focused response, while more severe predictions would suggest a more even allocation of resources between zone types.

Modelling the impacts of different amounts of sea-level rise in other urban areas would provide further insight into this topic. Since the nuances of different cities varies greatly around the world, it would be especially interesting to see if certain urban planning regimes are more successful at mitigating the impacts of sea-level rise.

Acknowledgements

Help and Support
Lynn Carlson - Brown University GIS System Manager
Tom Stieve - Brown University Social Science Data Librarian
Data
LIDAR Elevation - Puget Sound Lidar Consortium
Parcels - King County Department of Assessments
Geocoding Street Index - ESRI StreetMap Premium
Orthoimagery - LANDSAT ETM+ via United States Geologic Survey
Coastline - Washington State Department of Transportation
Software
ESRI ArcInfo 9.3

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