The Potential Impact of Climate Change on Iran's Agriculture

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outlines

- Interactions between climate and agriculture
- Iran's agricultural circumstances
- Impact of climate change on agriculture in basin level scale(case study: Savojblagh plain)
- Assessing adaptation strategies to tackle the negative impacts of climate change in field level scale (case study: Tehran)

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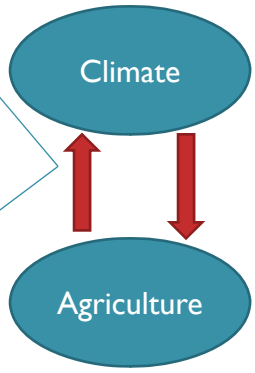
Interactions between Agriculture and Climate Change

✓Enteric fermentation of livestock
✓Rice cultivation
✓ Material left to rot

CH4

✓breakdown of both organic (manure) and inorganic (oil based) fertilizer.

N2O



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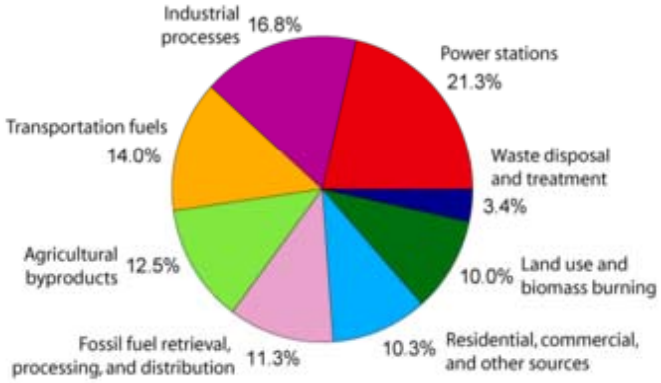
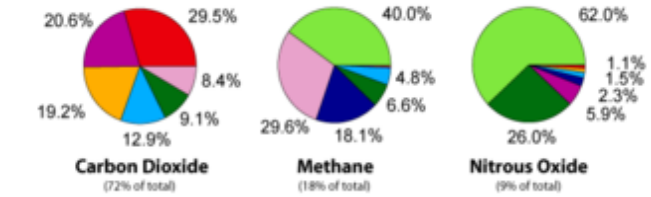
Annual Greenhouse Gas Emissions by Sector





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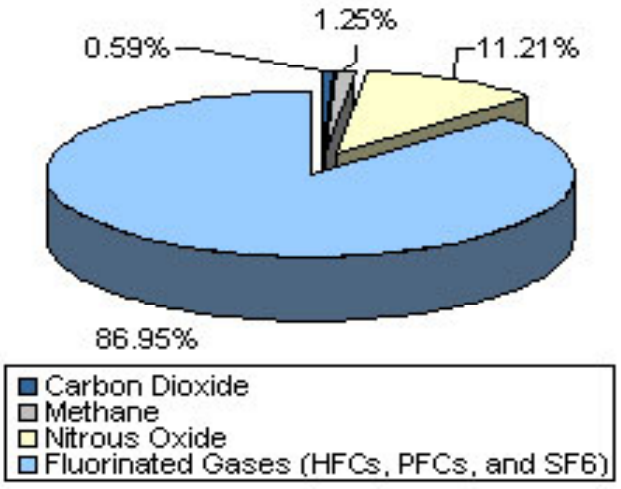
Total GHG Emissions Indexed Using GWPs



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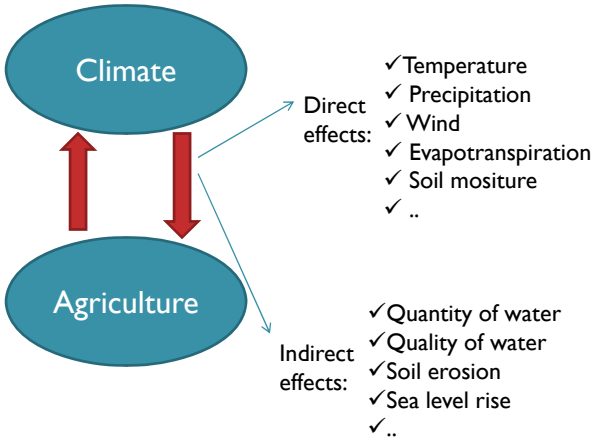
Interactions between Agriculture and Climate Change



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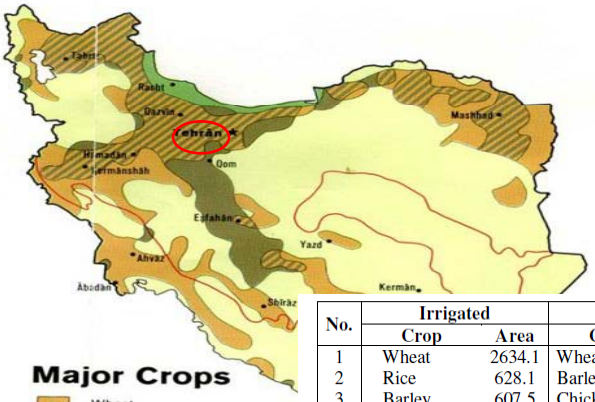
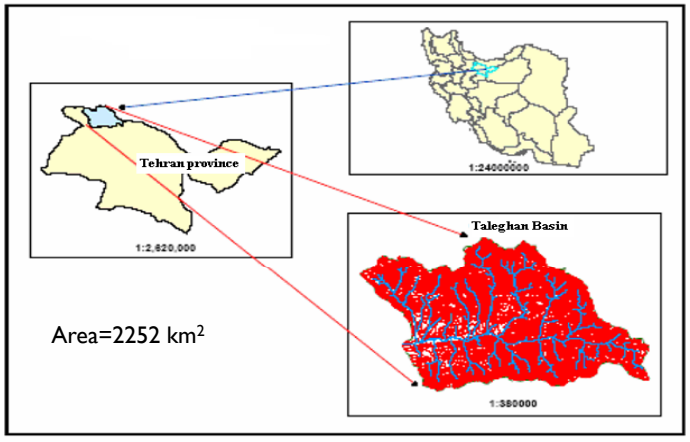
Iran agricultural circumstances



No.	Irrigated		Rainfed	
	Crop	Area	Crop	Area
1	Wheat	2634.1	Wheat	4136.6
2	Rice	628.1	Barley	1051.7
3	Barley	607.5	Chickpea	522.1
4	Alfalfa	559.9	Lentil	213.5
5	Corn	275.9	Canola	73.5
6	Potato	186.9	Alfalfa	56.3
7	Sugar beet	152.9	Soya	25.6
8	Cotton	143.2	Clover	21.3
9	Tomato	138.0	Cotton	16.3
10	Watermelon	116.3	Watermelon	15.1

Impacts of climate change on agriculture in basin level scale (Savojbalagh plain) in Future periods (2012-2100)



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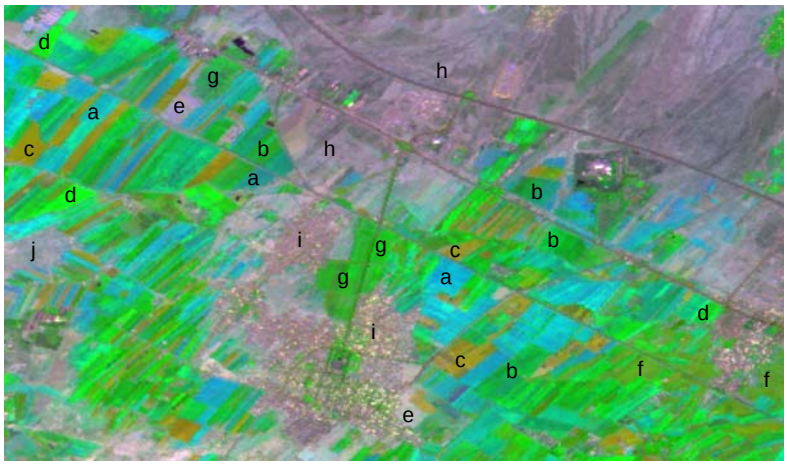
The crop pattern of the basin using IRS(LISS III) images



a:wheat, b:barley, c: maiz, d: alfalfa, e: not cultivated, j: building, i:rangeland, h:trees, g:vineyard

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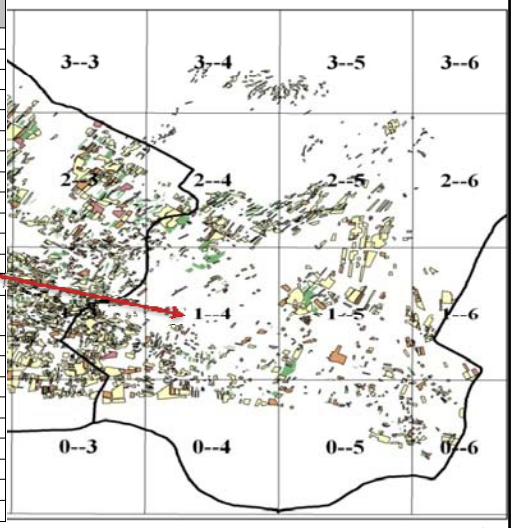
The crop pattern of the basin using IRS(LISS III) images

	Barley	Maize	Wheat	Alfalfa
0--2	92.8	30.1	92.8	11.6
0--3	167.15	70.9	167.15	1.2
0--4	123	74.7	123	17.2
0--5	83.7	97.5	83.7	1.2
0--6	61.35	55.6	61.35	1.3
1--1	142.45	81.8	142.45	0.4
1--2	1364.75	673.2	1364.75	66.8
1--3	1046	643.1	1046	103.8
1--4	216.9	303.8	216.9	35
1--5	366.7	448.3	366.7	25.5
1--6	101.15	75.6	101.15	13.1
2--0	182.45	127.1	182.45	6
2--1	484.25	570.6	484.25	48.8
2--2	997.1	903.4	997.1	76.5
2--3	681	601.2	681	185.8
2--4	368.35	263.9	368.35	20.6
2--5	314	55.2	314	12.8
2--6	5.8	0	5.8	1.5
3--0	68.15	73.3	68.15	4.4
3--1	33	28.7	33	2.3
3--2	270	209.2	270	58.5
3--4	46.25	0	46.25	1.2
3--5	27.85	0	27.85	0
Sum	7244.15	5387.2	7244.15	695.5



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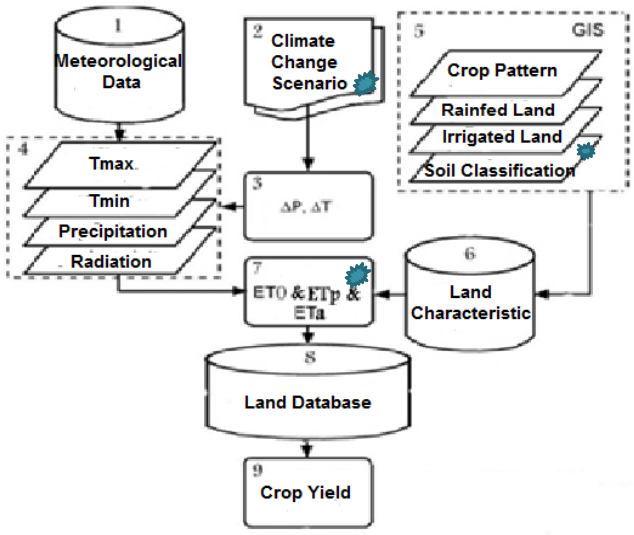
Methodology (AEZ/GIS)



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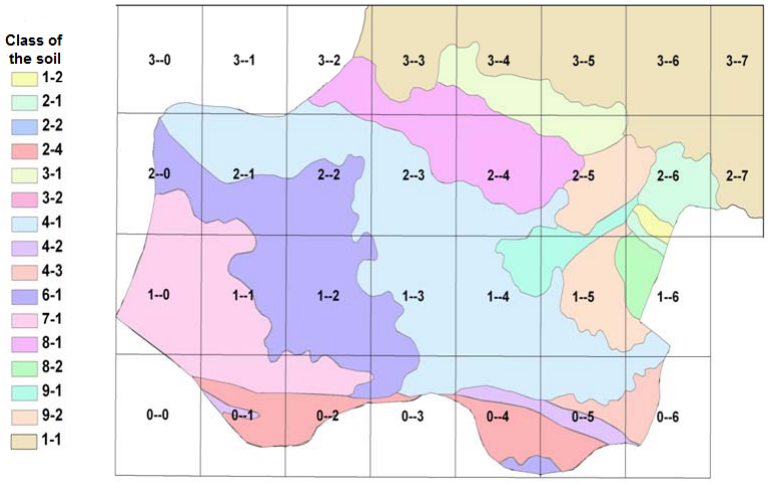
Soil classification of Savojblagh plain



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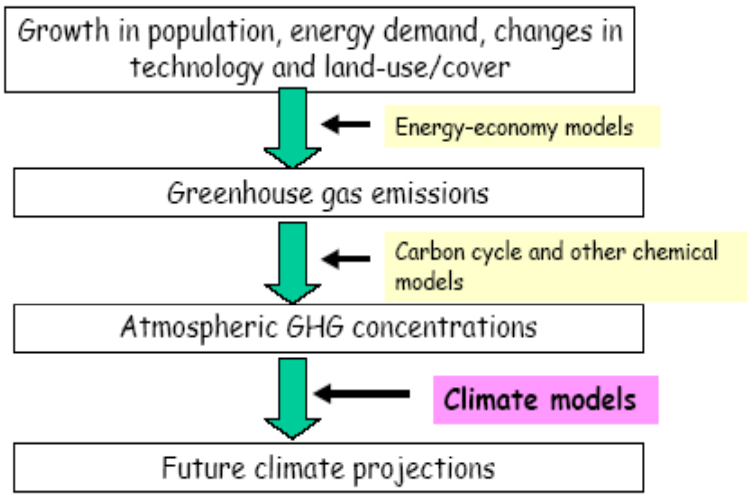
AOGCM projections procedure



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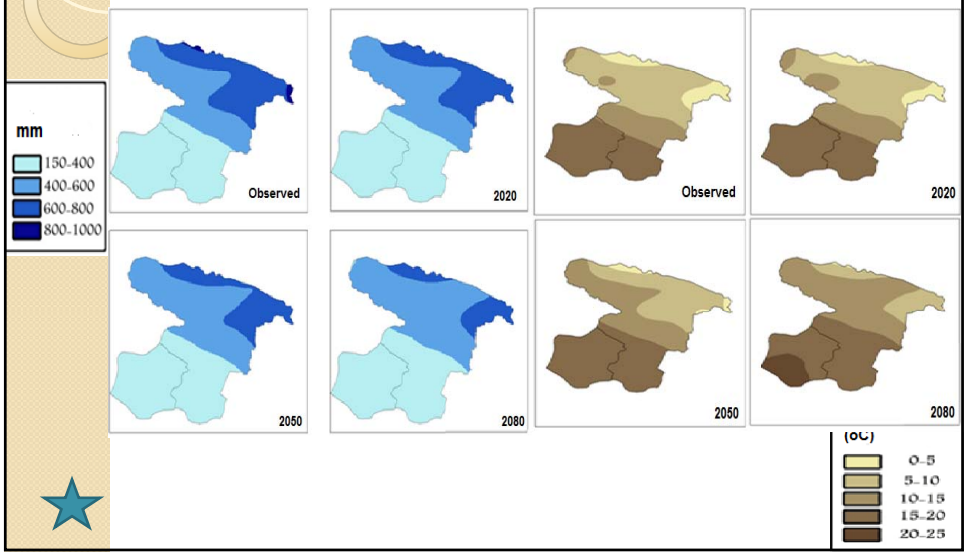
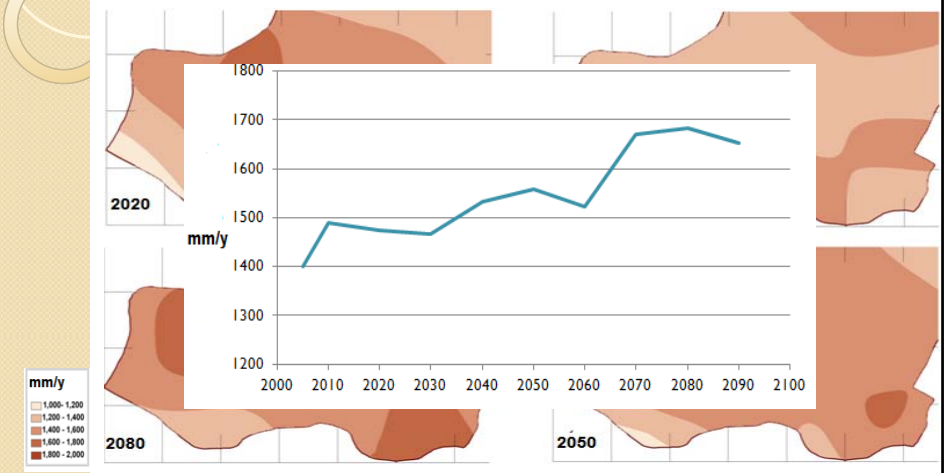
Precipitation and Temperature in the future (HadCM3-A2)



ET0 in the future



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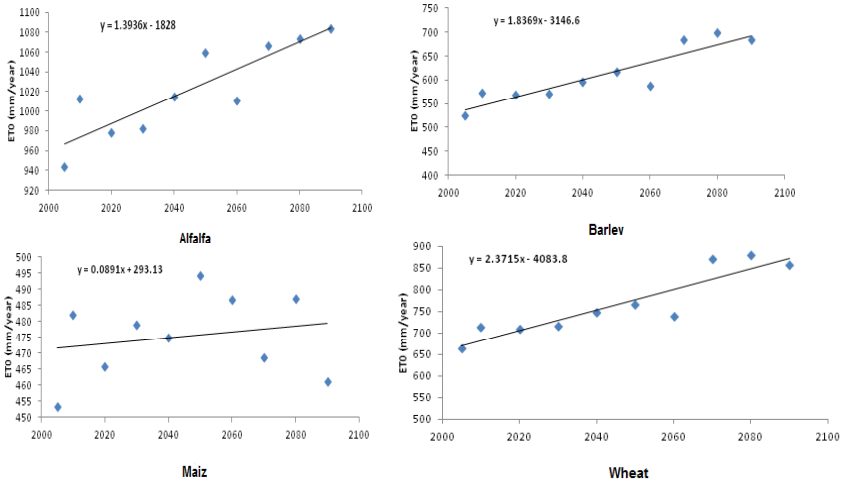
ETc of crops in future



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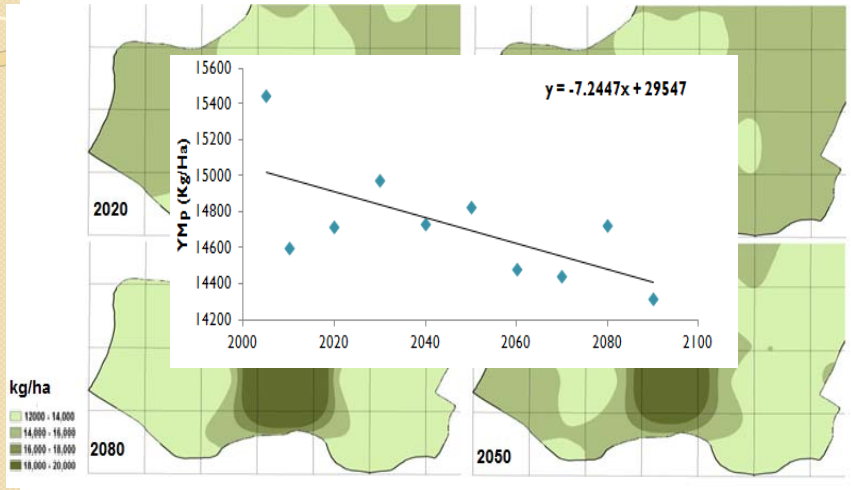
Alfalfa Yield in the future



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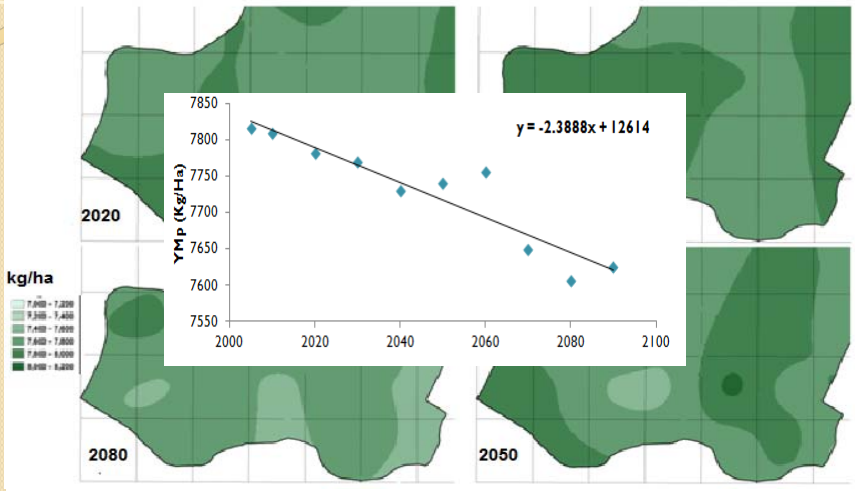
Barley Yield in the future



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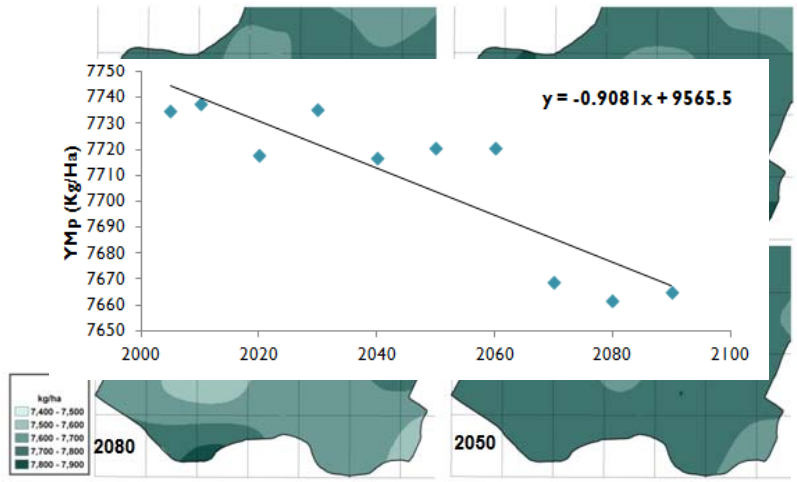
Maize yield in the future



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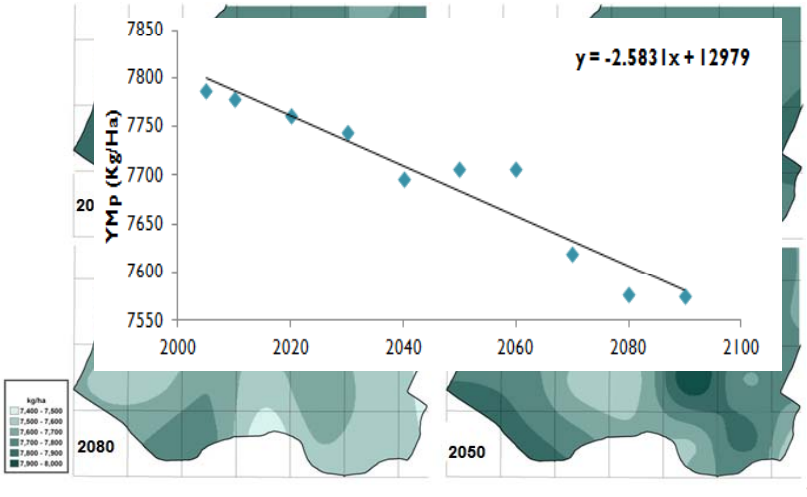
Wheat yield in the future



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Final Results

1) Based on HadCM3-A2 output, temperature will increase 0.04 °c/year and precipitation will decrease 20 mm/year by the end of this century.
2) The rate of changes of Crop yield (kg/ha), ETc(mm/y), net irrigation demand(mm/y), net volume of Irrigation demand (cm/year), and volume of Irrigation demand (cm/year) from 2005 to 2100 are as follows:

	ETc (mm/year)	Net irrigation demand (mm/year)	Net volume of irrigation demand (m3/year)	Volume irrigation demand (m3/year)	Crop yield (kg/ha/year)
Alfalfa	+15	+20	+5500	+1630	-21.2
Barely	+18	+19.6	+41700	+32880	-23.6
Maize	+0.8	+4.1	+7600	+5810	-7.8
Wheat	+22	+26.7	+44800	+33210	-125.4

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Assessing adaptation strategies to tackle the negative impacts of climate change on Maize in field level scale (case study: Tehran)

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