The Impact of Climate Change on Brazilian Agriculture
Major Results and Policy Implications

Luiz JM Irias

August 28-29, 2007

Montevideo, Uruguay

MAJOR RESULTS

(RICARDIAN ANALYSIS)

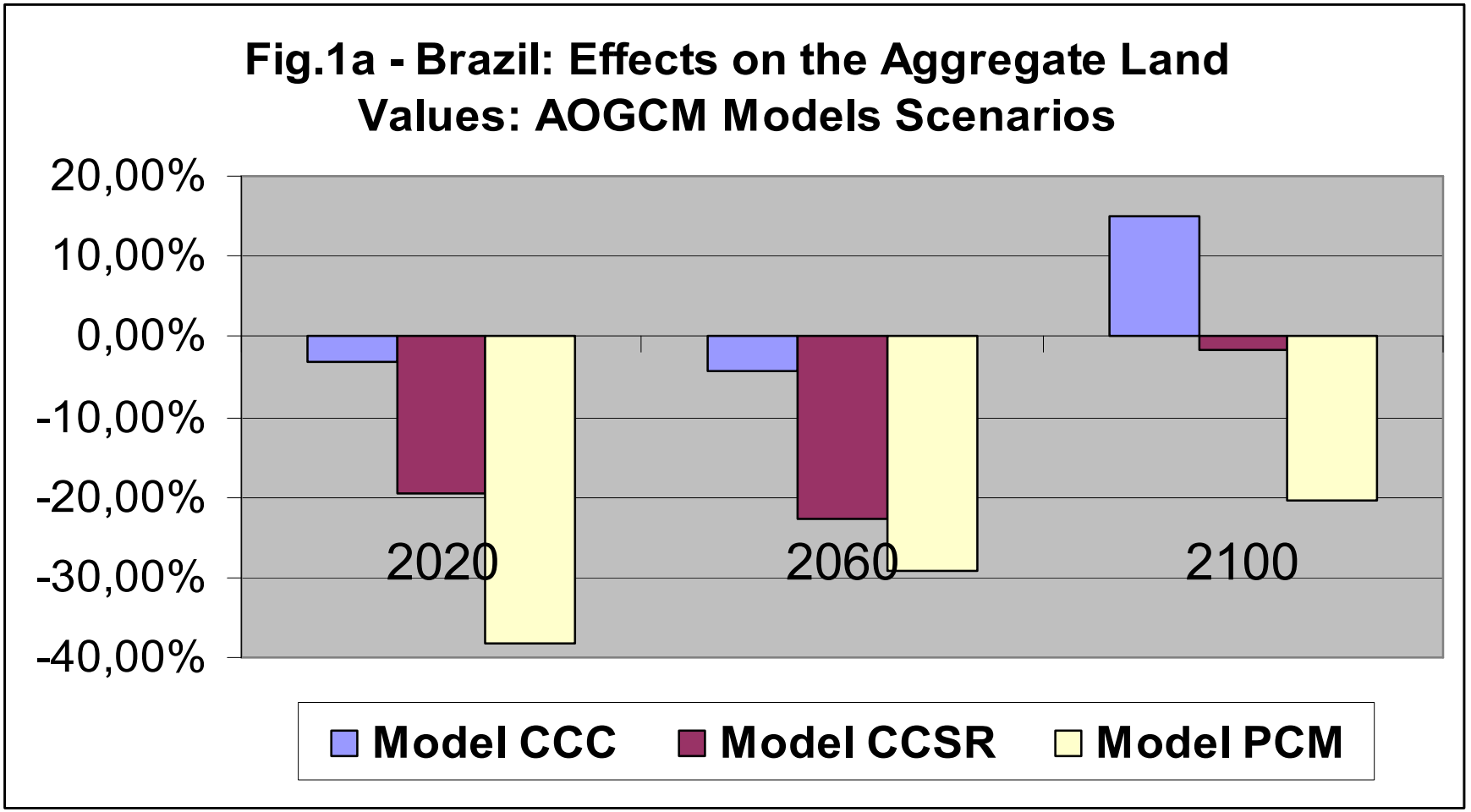
a). Regression Estimates (t values)

Climate Variables	*Aggregate*	*Small Farms*	*Commercial Farms*
Summer temper. (°C)	**-3568.69 (-4.80)**	**-2559.46 (-2.93)**	**-3719.53 (-2.74)**
Winter temper. (°C)	**196.38 (6.37)**	**1047.41 (4.72)**	**1100.21 (2.72)**
Summer precipit. (mm/mo)	**9.40 (1.67)**	**9.02 (1.45)**	**6.50 (0.57)**
Winter precipit. (mm/mo)	**5.14 (0.95)**	**7.18 (1.17)**	**9.94 (0.85)**

b). Marginal Effects (US$) and (Elasticities) on Land Values

Climate Variables	*Aggregate*	*Small Farms*	*Commercial Farms*
Summer temper. (^oC)	**-298.03 (-3.00)**	**-40.98 (-0.41)**	**-738.35 (-7.85)**
Winter temper. (^oC)	**-72.65 (-0.62)**	**-437.36 (-4.32)**	**155.25 (1.39)**
Summer precipit. (mm/mo)	**0.50 (0.04)**	**1.51 (0.13)**	**0.23 (0.02)**
Winter precipit. (mm/mo)	**9.33 (0.28)**	**9.55 (0.29)**	**7.08 (0.19)**

PROJECTIONS UNDER MULTIPLE SCENARIOS AGGREGATE

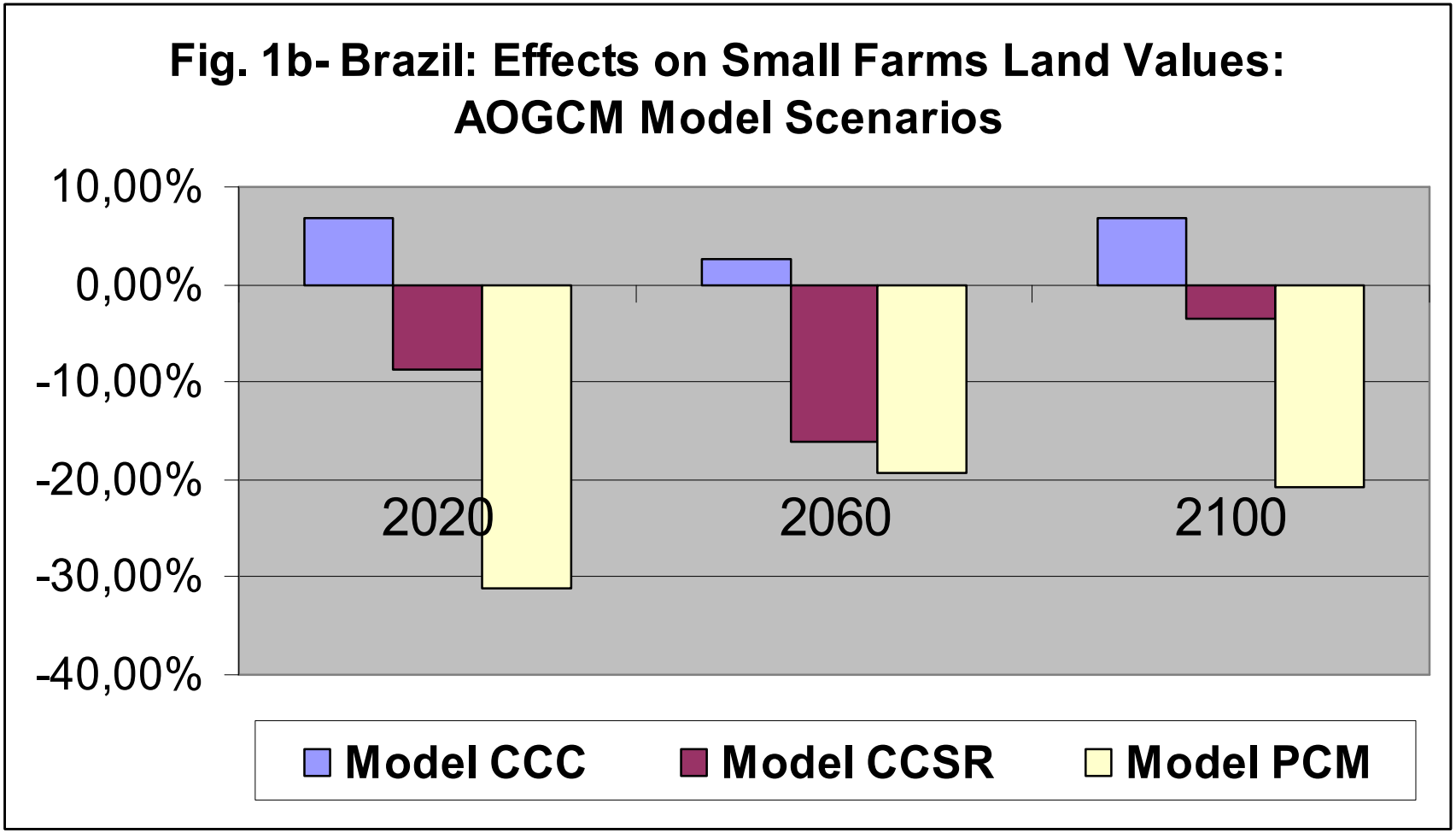


CCC – Canadian Climate Center

CCSR – Center for Climate System Research

PCM – Parallel Climate Model

PROJECTIONS UNDER MULTIPLE SCENARIOS
SMALL FARMS

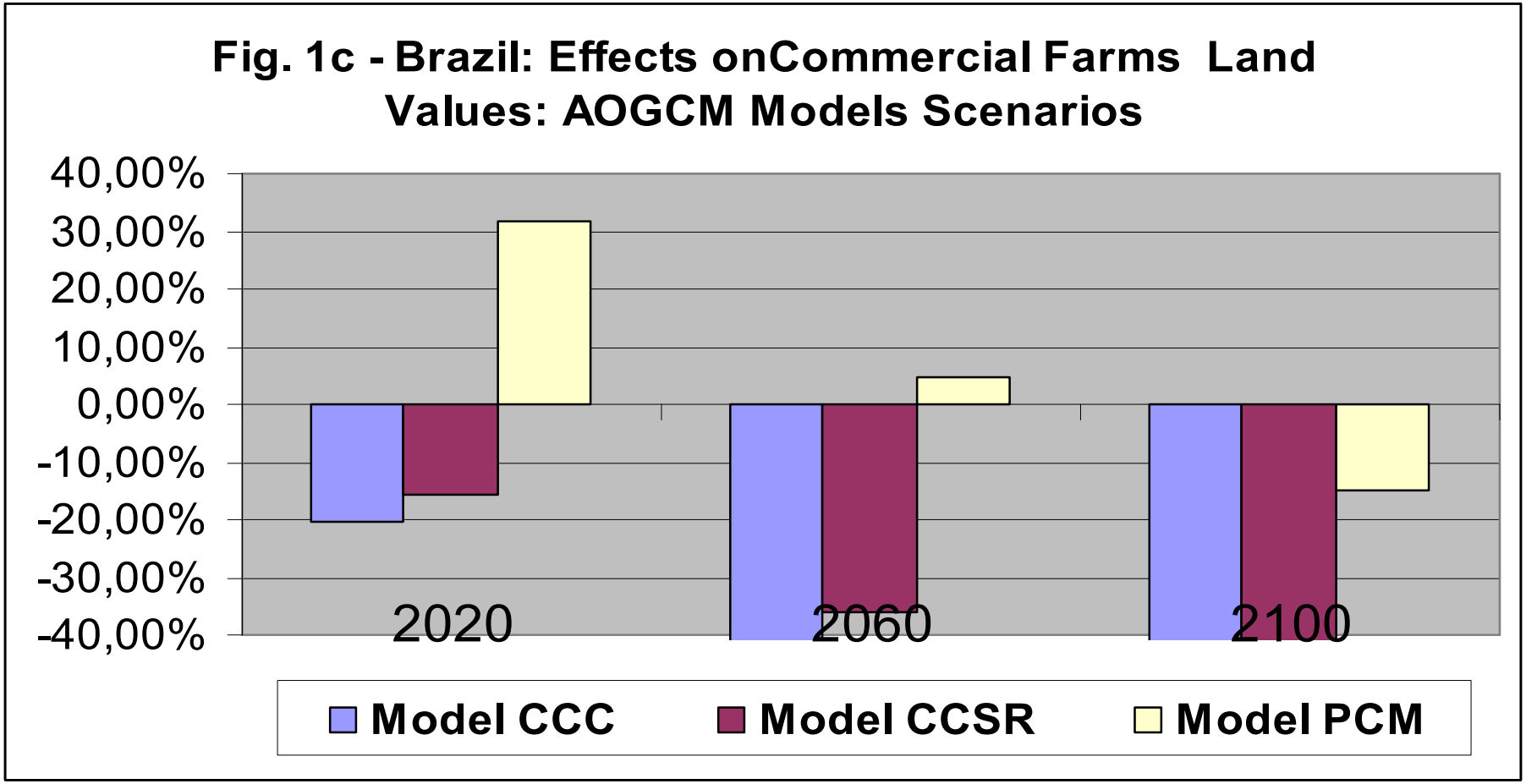


CCC – Canadian Climate Center

CCSR – Center for Climate System Research

PCM – Parallel Climate Model

PROJECTIONS UNDER MULTIPLE SCENARIOS
COMMERCIAL FARMS



CCC – Canadian Climate Center

CCSR – Center for Climate System Research

PCM – Parallel Climate Model

CONCLUSIONS

•Summer and winter temperature and precipitation are very important in the determination of the land values;

• Soil types, slope and texture, population density, use of electricity and extension services, as well as, farmers age and education are also important;

• Temperature marginal effects on land values are relatively large and negative in most the cases. It is positive for commercial farmers;

• Precipitation marginal effects on land values, even though positive, are relatively small for all cases;

• Most of the models predicted negative results in all scenarios. CCC model predicted positive results in the aggregate (2100) and , for small farms (2020, 2060 and 2100). PCM predicted positive results for commercial farms in 2020 and 2060

POLICY IMPLICATIONS

- ***Implementation of specific policies and strategies to deal with climate changes in the long run;***

- ***Efficient adaptation should be encouraged to reduce impacts;***

- ***Developing crops and livestock suitable for warmer temperatures should be considered;***

- ***Suitable new technological developments are quite relevant for small farms specially in the case of winter temperature changes;***