




Agricultural and Land Use Software for Estimating Livestock GHG Emissions



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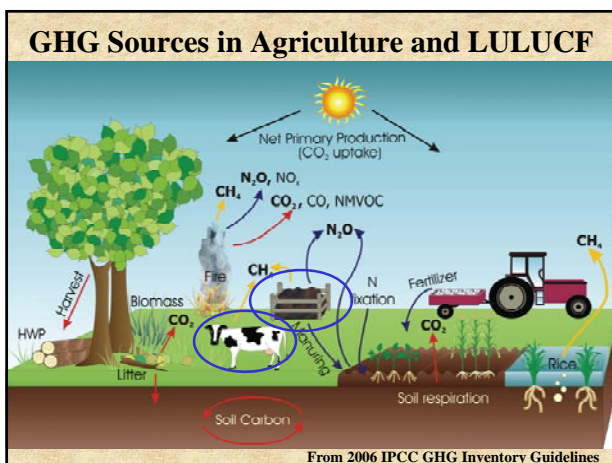


Acknowledgements:
Collaborators: Keith Paustian (Colorado State University), Linda Heath (US-Forest Service), Daniel Martino (Carbosur Consulting)
ALU Software Design Team: Dean Selby, Mark Easter, Shannon Spencer, Stephen Williams



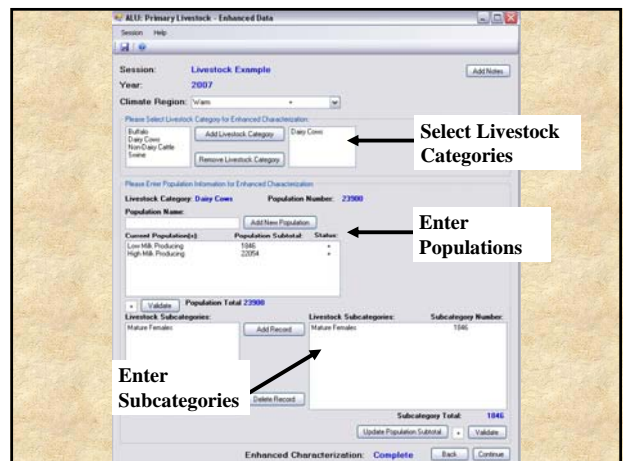
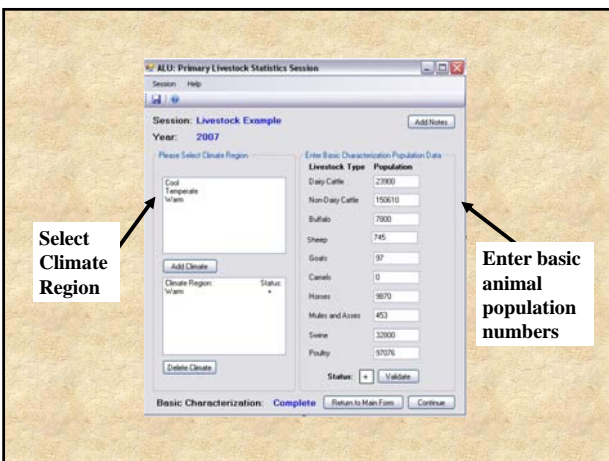
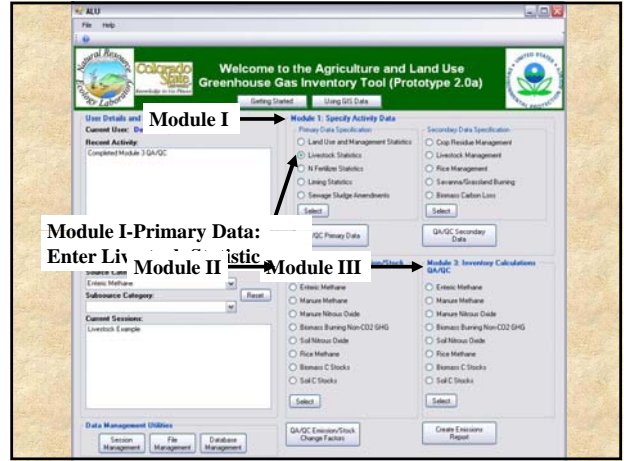
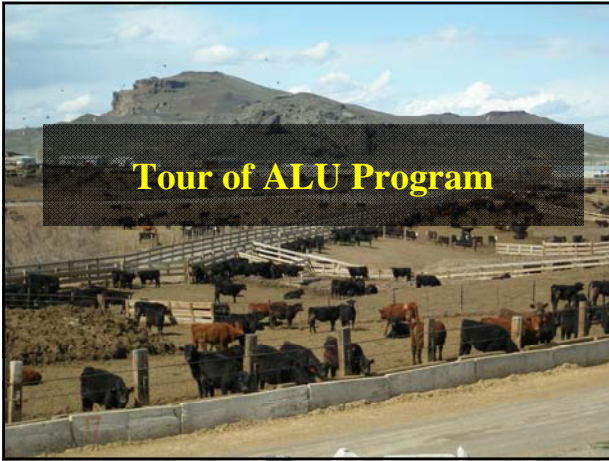
What is ALU?

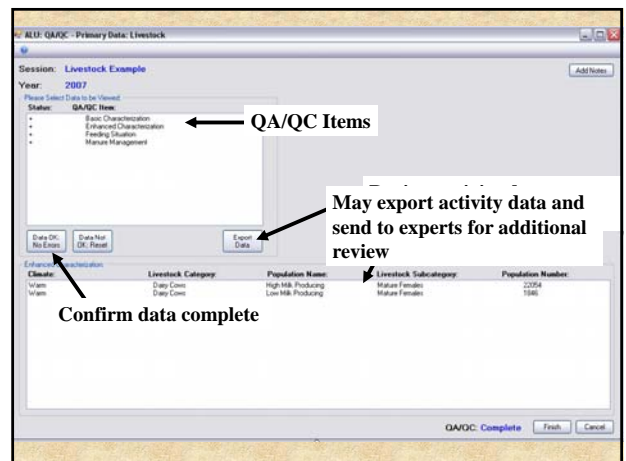
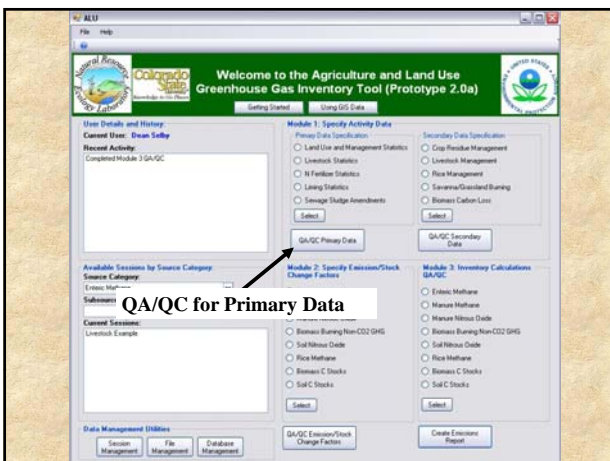
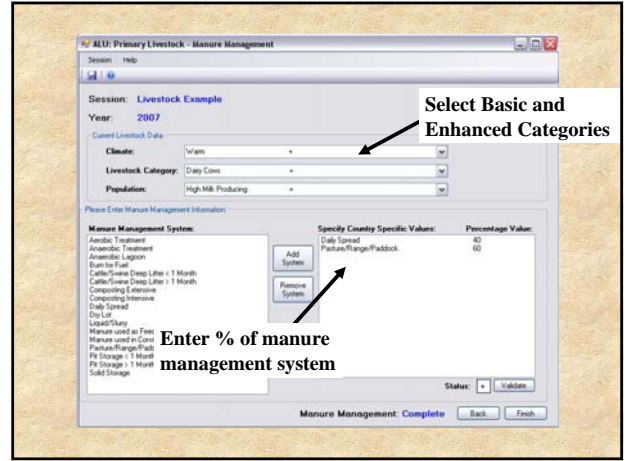
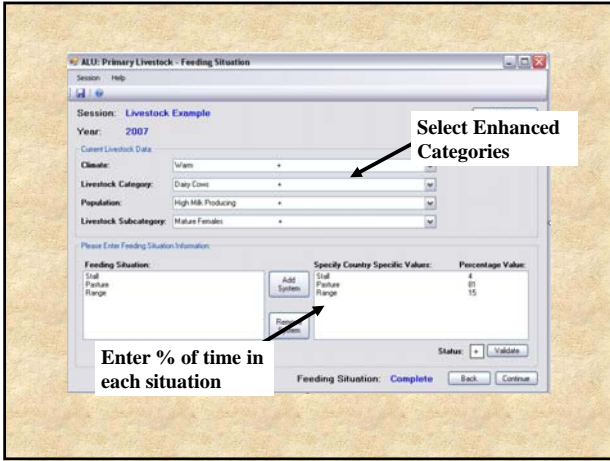
- **Greenhouse Gas Inventory Software Program**
 - Second generation of software, originally called CAALU
 - Developed for LULUCF and Agricultural Sectors
 - Based on IPCC methods (96 GL and 2000/2003 GPG)
 - Emphasis on incorporation of good practices
 - Accommodates IPCC Tier 1 and 2 methods
- **User-interface guiding compiler through inventory process with an underlying relational database structure**
 - Activity data entry, emission factor assignment and emission calculation
 - Explicit Quality Assurance/Quality Control
- **Digital archive for GHG inventory data**

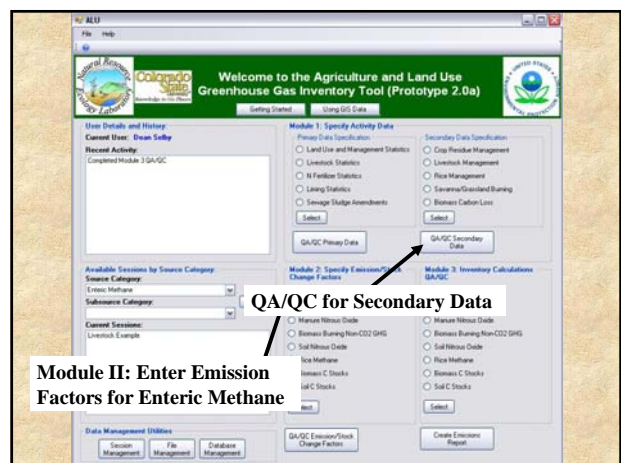
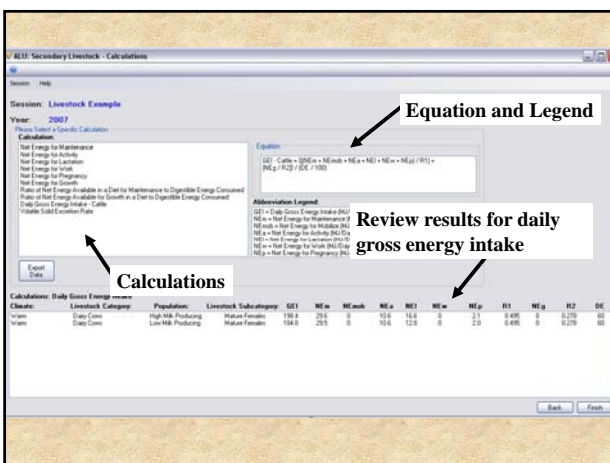
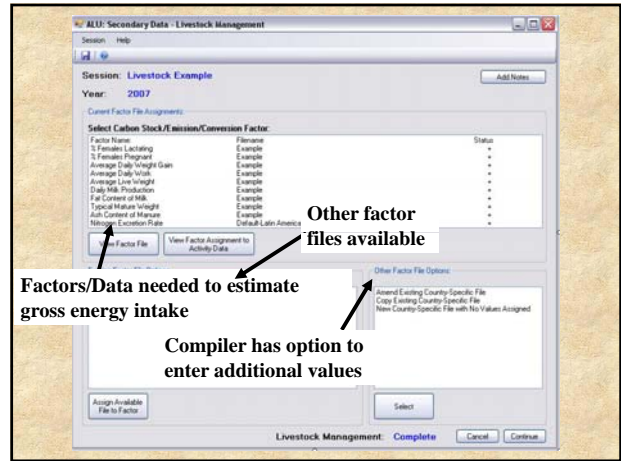
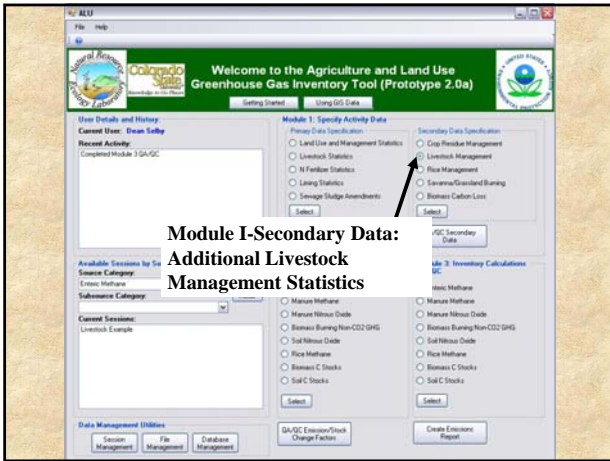


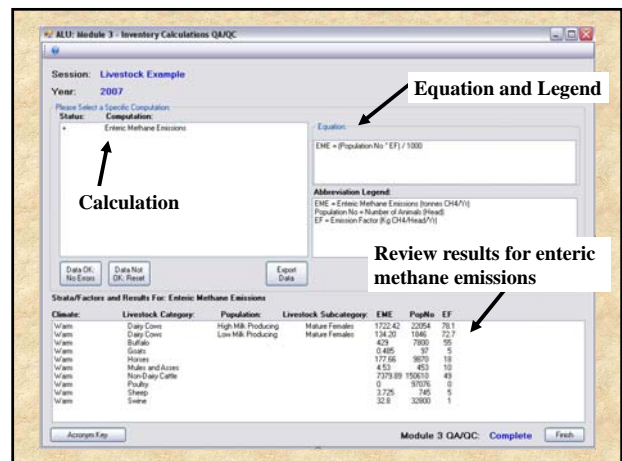
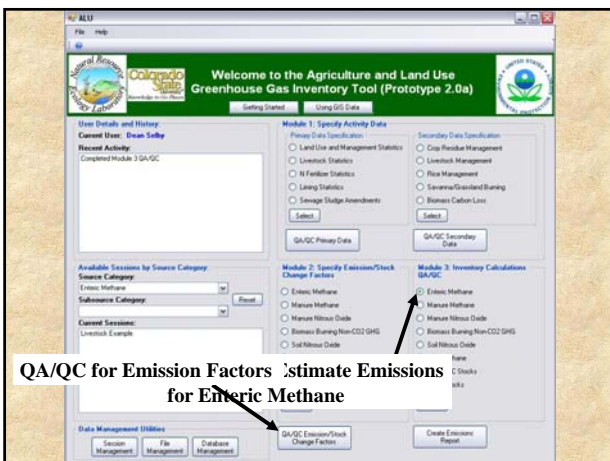
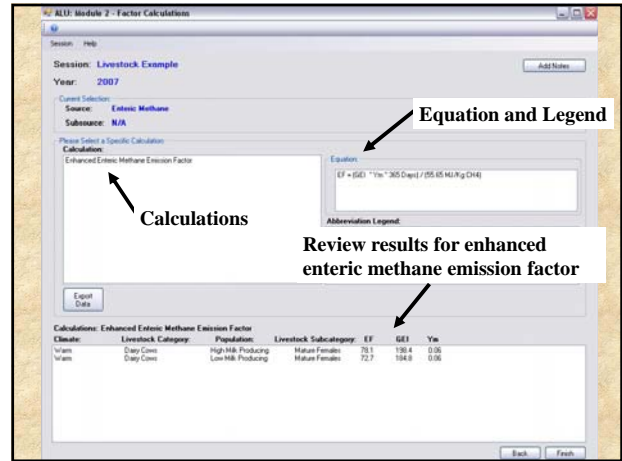
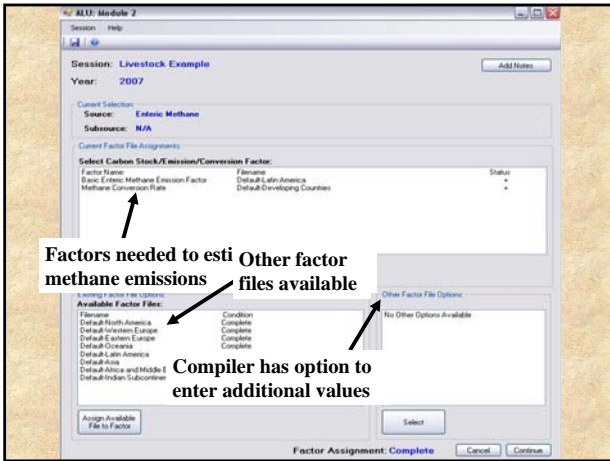
Regional Capacity-Building Projects

- **US-EPA, USAID, CSU, USFS and NASA**
- **ALU developed for regional capacity building projects**
 - Central America and new project in Southeast Asia
 - Goal: Improve GHG inventory for reporting to UNFCCC
- **Foci of capacity building**
 - Improving national system including institutional arrangements, key category analysis, archiving, institutional memory
 - Applying good practices in LULUCF and Agricultural sectors
 - ALU software program
 - In-country training workshops











Climate	Livestock Category	Population Name (Enhanced Out)	Livestock Subcategory (Enhanced Out)	Livestock Population Number (number of animals)	Gross Energy Intake (MJ/day/animal) (enhanced only)	Emission Factor (kg CH ₄ /animal ¹ /yr ¹)	CH ₄ Emission (t/yr)
warm	Duffus			7600		55.0	0.4250
warm	Dairy Cattle	high milk producing	Mature Females	23354	195.4	78.1	1.7204
warm	Dairy Cattle	low milk producing	Mature Females	1586	134.8	72.7	0.1242
warm	Goats			52		6.0	0.0005
warm	Horses			9670		19.0	0.1777
warm	Males And Access			453		10.0	0.0045
warm	Non-Dairy Cattle			15810		49.0	7.3769
warm	Poultry			80176		0.0	0.0000
warm	Sheep			745		6.0	0.0017
warm	Swine			33003		1.0	0.0338
				Total			9.8847

ALU Activity Data Workbook

- Provide guidance for compiling activity data for Agriculture and LULUCF sectors, using IPCC good practice guidance
- Workbook has step-by-step guidance and spreadsheets for recording activity data
- Facilitate activity data entry into the ALU software program
- Released April 2008

Priority Refinements

- ALU could be refined to address uncertainty
- Develop a mitigation module for projections of GHG trends with various mitigation options
- Will require additional funding



Thanks for your attention!
More information:
[http://www.nrel.colostate.edu/
projects/ghgtool/](http://www.nrel.colostate.edu/projects/ghgtool/)
(Projected Release of new ALU program: January 2009)

